FINAL ENVIRONMENTAL IMPACT REPORT FOR IMPLEMENTATION OF THE 1995 BAY/DELTA WATER QUALITY CONTROL PLAN

State Clearinghouse Number 97-122056

RESPONSE TO COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT REPORT

VOLUME 3

November 1999

STATE WATER RESOURCES CONTROL BOARD
California Environmental Protection Agency

FINAL ENVIRONMENTAL IMPACT REPORT

FOR

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WATER QUALITY CONTROL PLAN

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RESPONSE TO COMMENTS

Preface

This document discloses the comments received on the draft Environmental Impact Report for Implementation of the 1995 Bay/Delta Water Quality Control Plan and the SWRCB response to those comments. Volume I of the draft EIR (Chapters I through XII), was issued in November 1997. Volumes II (Chapter XIII) and III (Appendices) were issued on December 16, 1997. The Draft EIR was circulated to interested parties with a 45-day review, commencing with the release of Volumes II and III. Comments were to be received by January 30, 1998. Based upon requests by interested parties, the comment period was extended to April 1, 1998.

Volume IV of the Draft EIR was issued on May 26, 1998. Volume IV contains revisions to Chapters V, VI, and XIII to include the provisions of the San Joaquin River Agreement as (1) an alternative for implementing the flow objectives in the 1995 Bay/Delta Plan (Flow Alternative 8) and (2) as an alternative for implementing the petition for joint use of the SWP and CVP points of diversion in the Delta (Joint POD Alternative 9). Chapters V and VI were also revised to correct errors in the original modeling of Flow Alternative 5. Volume IV was circulated for a 45-day review, with comments due by July 13, 1998.

The SWRCB received 104 letters, representing the comments of 125 parties on the Draft EIR. The letters are available for review in their entirety on the SWRCB website (*http://www.waterrights.ca.gov/baydelta*). The letters have not been reproduced for inclusion in this document. Individual comments have been paraphrased in some cases and similar comments have been combined where possible.

The comments are organized in the same order as the chapters, sections and pages of the draft EIR. Chapter and section headings in this document correspond to the respective headings in the Draft EIR. Section headings are not included if no comments were received on that section. Comments on the revised chapters are denoted with an "R" affixed to the page reference.

The party or parties responsible for making individual comments are identified by the acronyms or abbreviations in parentheses at the end of the comment. In some cases, one letter was received on behalf of two or more parties. In those cases, the acronym or abbreviation of the first party listed on the letter was used to denote the commentor. The following tables will help the reader identify the commentors. The first table lists the parties represented (alphabetically), the acronym or abbreviation used to identify their comments, and the date that the comment letter was received. The second table provides an alphabetic listing of the acronyms and abbreviations used to represent the parties that submitted comments.

List of Agencies or Individuals Submitting Comments on the Draft EIR

Commentor Name	Abbreviation	Date Rec'd
Area 1 Landowners	Area1	04/01/98
Arvin Edison Water Storage District	AEWSD	04/02/98
Banta Carbona Irrigation District	SDWA	04/06/98
Bay Institute of San Francisco, The	BISF	04/01/98
Biggs West-Gridley Water District, et al	BWGWD	04/01/98
Biggs West-Gridley Water District, et al (2)	BWGWD-2	07/13/98
Browns Valley Irrigation District	BVID	03/27/98
Browns Valley Irrigation District (2)	BVID-2	07/13/98
Burick	Burick	01/29/98
Butte Sink Waterfowl Association, Inc.	BSWA	04/01/98
Butte Water District	BWGWD	04/01/98
Butte Water District (2)	BWGWD-2	07/13/98
Butte, County of	Butte Co.	04/01/98
Byron Bethany Irrigation District	BWGWD	04/01/98
Byron Bethany Irrigation District (2)	BWGWD-2	07/13/98
Calaveras County Water District	Calaveras Co. WD	04/01/98
California Farm Bureau Federation	CFBF	04/01/98
Camp Far West Irrigation District, et al	CFWID	04/01/98
Carmichael Water District	CWD	07/13/98
Central California Irrigation District	BWGWD	04/01/98
Central California Irrigation District (2)	BWGWD-2	07/13/98
Central Delta Water Agency	CDWA	04/01/98
Central San Joaquin Water Conservation District	CSJWCD	04/01/98
Central Valley Regional Water Quality Control Board	CVRWQCB	01/30/98
Cheeseman's Ecological Safaris	Cheeseman	01/28/98
Contra Costa Water District	CCWD	04/01/98
Contra Costa Water District (2)	CCWD-2	07/13/98
Cordua Irrigation District	BWGWD	04/01/98
Cordua Irrigation District (2)	BWGWD-2	07/13/98
Cross Valley Canal Contractors	CVCC	04/01/98
Cross Valley Canal Contractors (2)	CVCC-2	07/13/98
Davis, City of	PCC	04/01/98
Department of Water Resources	DWR	04/01/98
East Bay Municipal Utility District	EBMUD	04/01/98
East Bay Municipal Utility District (2)	EBMUD-2	07/13/98
El Camino Irrigation District	BWGWD	04/01/98
El Camino Irrigation District (2)	BWGWD-2	07/13/98
El Dorado County Water Agency	EDCWA	04/01/98
El Dorado County Water Agency (2)	EDCWA-2	07/13/98
Environmental Defense Fund	EDF	04/01/98
Environmental Defense Fund (2)	EDF-2	07/13/98

List of Agencies or Individuals Submitting Comments on the Draft EIR

Commentor Name	Abbreviation	Date Rec'd
Family Water Alliance	FWA	04/01/98
Firebaugh Canal Water District	BWGWD	04/01/98
Firebaugh Canal Water District (2)	BWGWD-2	07/13/98
Fish and Game, Department of	DFG	04/01/98
Fish and Game, Department of (2)	DFG-2	07/13/98
Friant Power Authority	BWGWD	04/01/98
Friant Power Authority (2)	BWGWD-2	07/13/98
Friant Water Users Authority	FWUA	03/31/98
Friant Water Users Authority (2)	FWUA-2	07/09/98
Garden Highway Mutual Water Company (1A)	CFWID	04/01/98
Garden Highway Mutual Water Company (1)	BWGWD	04/01/98
Garden Highway Mutual Water Company (2)	BWGWD-2	07/13/98
Georgetown Divide Public Utility District	GDPUD	03/31/98
Georgetown Divide Public Utility District (2)	BVID-2	07/13/98
Glenn-Colusa Irrigation District (1A)	GCID-1A	04/01/98
Glenn-Colusa Irrigation District (1)	SVWU	04/01/98
Gorrill Land Company & R Gorrill Ranch Enterprise	Gorrill	04/06/98
Grassland Water District	GWD	04/01/98
Hammond Reservoir Irrigation Association	HRIA	01/30/98
Hot Springs Valley Irrigation District	HSVID	03/30/98
Hot Springs Valley Irrigation District (2)	BVID-2	07/13/98
Ironhorse Sanitary District	ISD	04/01/98
Kern - Tulare Water District	KTWD	04/03/98
Los Angeles Department of Water and Power	LADWP	04/01/98
Los Molinos Mutual Water Company	BWGWD	04/01/98
Los Molinos Mutual Water Company (2)	BWGWD-2	07/13/98
Merced Irrigation District (2)	MERCED ID	07/13/98
Metropolitan Water District of Southern California	MWD	04/01/98
Modesto Irrigation District	TID&MID	03/31/98
Morrow Island Land Company	MILC	04/03/98
Mountain Counties Water Resources Association	MCWRA	04/01/98
Moyle	Moyle	04/01/98
M&T Ranch	BWGWD	04/01/98
M&T Ranch (2)	BWGWD-2	07/13/98
Natomas Central Mutual Water Agency	SVWU	04/01/98
Natural Heritage Institute	NHI	04/01/98
Natural Resource Scientists, Inc	NRS	04/01/98
Natural Resources Defense Council	BISF	04/01/98
Natural Resources Defense Council (2)	BISF-2	07/13/98
Nevada Irrigation District	BWGWD	04/01/98
Nevada Irrigation District (2)	BWGWD-2	07/13/98
Northern California Water Association	NCWA	04/01/98

List of Agencies or Individuals Submitting Comments on the Draft EIR

Commentor Name	Abbreviation	Date Rec'd
Orland Unit Water Users Association (1A)	OUWUA-1A	03/31/98
Orland Unit Water Users Association (1)	BWGWD	04/01/98
Orland Unit Water Users Association (2)	BWGWD-2	07/13/98
Oroville-Wyandotte Irrigation District	BWGWD	04/01/98
Oroville-Wyandotte Irrigation District (2)	BWGWD-2	07/13/98
Paradise Irrigation District	BWGWD	04/01/98
Paradise Irrigation District (2)	BWGWD-2	07/13/98
Pelger Mutual Water Company	SVWU	04/01/98
Placer County Water Agency (1A)	PCWA-1A	04/01/98
Placer County Water Agency (1)	SVWU	04/01/98
Plumas Mutual Water Company	BWGWD	04/01/98
Plumas Mutual Water Company (2)	BWGWD-2	07/13/98
Princeton-Codora-Glenn Irrigation District	SVWU	04/01/98
Proberta Water District	PWD	02/03/98
Provident Irrigation District	SVWU	04/01/98
Putah Creek Council	PCC	04/01/98
Rag Gulch Water District	RGWD	04/03/98
RC Farms Inc.	CDWA	04/01/98
Reclamation District 1004	BWGWD	04/01/98
Reclamation District 1004 (2)	BWGWD-2	07/13/98
Reclamation District 108	SVWU	04/01/98
Reclamation District 2039	CDWA	04/01/98
Reclamation District 2072	CDWA	04/01/98
Reclamation District 830	RD830	04/01/98
Regional Council of Rural Counties	RCRC	03/31/98
Richvale Irrigation District	BWGWD	04/01/98
Richvale Irrigation District (2)	BWGWD-2	07/13/98
Sacramento Municipal Utility District	SMUD	04/01/98
Sacramento Municipal Utility District (2)	SMUD-2	07/14/98
Sacramento Valley Water Users	SVWU	04/01/98
Sacramento Valley Water Users (2)	SVWU-2	07/13/98
Sacramento, City of	Sac	04/01/98
Sacramento, City of (2)	Sac-2	07/13/98
San Francisco Public Utilities Commission	SFPUC	03/31/98
San Joaquin County	SJC	04/01/98
San Joaquin County Flood Control & Water Conservation District	SJC	04/01/98
San Joaquin River Exchange Contractors Water Authority (1A)	SJRECWA-1A	04/01/98
San Joaquin River Exchange Contractors Water Authority (1)	BWGWD-2	04/01/98
San Joaquin River Exchange Contractors Water Authority (2)	SJRECWA-2	07/13/98
San Joaquin River Group	SJRG	03/31/98
San Joaquin River Group (2)	SJRG-2	07/13/98

List of Agencies or Individuals Submitting Comments on the Draft EIR

Commentor Name	Abbreviation	Date Rec'd
San Juan Water District	SJWD	03/31/98
San Juan Water District (2)	BVID-2	07/13/98
San Luis & Delta-Mendota Water Authority	SLDMWA	04/01/98
San Luis & Delta-Mendota Water Authority (2)	SLDMWA-2	07/13/98
Shafter-Wasco Irrigation District	SWID	04/02/98
Sharon Gore	Gore	03/31/98
Shasta County Water Agency	Shasta CWA	01/30/98
Smith	Smith	06/30/98
Solano County Water Agency	SCWA	03/31/98
Solano Irrigation District	BWGWD	04/01/98
Solano Irrigation District (2)	BWGWD-2	07/13/98
South Delta Water Agency/BCID	SDWA	04/01/98
South Delta Water Agency/BCID (2)	SDWA-2	07/13/98
South Fork Irrigation District	SFID	03/31/98
South Fork Irrigation District (2)	BVID-2	07/13/98
South Sutter Water District	SVWU	04/01/98
Southern San Joaquin Municipal Utility District	SSJMUD	03/30/98
Stanford Vina Ranch Company	SVRC	04/01/98
Stanislaus, County of	Stanislaus Co.	04/01/98
State Water Contractors	SWC	04/01/98
Stockton East Water District	SEWD	04/01/98
Stockton, City of	Stockton	04/01/98
Stockton, City of (2)	Stockton-2	07/14/98
Stony Creek Business & Land Owners Coalition	SCBLOC	03/30/98
Sutter Extension Water District	BWGWD	04/01/98
Sutter Extension Water District (2)	BWGWD-2	07/13/98
Sutter Mutual Water Company	SVWU	04/01/98
Tehama-Colusa Canal Authority	TCCA	04/01/98
Thermalito Irrigation District	TID	04/02/98
Thomes Creek Watershed Association	TCWA	04/01/98
Trinity County Board of Supervisors	Trinity Co.	03/23/98
Tudor Mutual Water Company (1A)	BWGWD	04/01/98
Tudor Mutual Water Company (1)	CFWID	04/01/98
Tudor Mutual Water Company (2)	BWGWD-2	07/13/98
Tuolumne Utilities District	CFWID	04/01/98
Tuolumne Utilities District (2)	TUD-2	07/13/98
Turlock Irrigation District & Modesto ID	TID&MID	03/31/98
US Army Corps of Engineers	USCOE	01/23/98
US Dept of Interior	USDOI	04/01/98
Valley Water Protection Association	VWPA	03/31/98
West Sacramento, City of (1A)	W. Sac-1A	04/01/98
West Sacramento, City of (1)	SVWU	04/01/98

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Commentor Name	Abbreviation	Date Rec'd
Western Canal Water District	BWGWD	04/01/98
Western Canal Water District (2)	BWGWD-2	07/13/98
Westlands Water District	WWD	04/01/98
Westlands Water District (2)	WWD-2	07/13/98
Woodbridge Irrigation District	CFWID	04/01/98
Woodland, City of	Woodland	04/01/98
Yolo County Flood Control & Water Conservation District	YCFC&WCD	04/01/98
Yolo County Flood Control & Water Conservation District (2)	BVID-2	07/13/98
Yolo County, Water Resources Association of	WRAYC	03/31/98
Yuba County Water Agency (1A)	SVWU	04/01/98
Yuba County Water Agency (1)	YCWA-1	04/01/98
Yuba County Water Agency (2)	BVID-2	07/13/98
Yuba County Water District	YCWD	07/13/98

Alphabetical Listing of Acronyms and Abbreviations Used to Represent Agencies or Individuals Submitting Comments on the Draft EIR

Abbreviation	Commentor Name
AEWSD	Arvin Edison Water Storage District
Area1	Area 1 Landowners
BISF	Bay Institute of San Francisco, The Natural Resources Defense Council
BISF-2	Natural Resources Defense Council (2)
BSWA	Butte Sink Waterfowl Association, Inc.
Burick	Burick
Butte Co.	Butte, County of
BVID	Browns Valley Irrigation District
BVID-2	Browns Valley Irrigation District (2) Georgetown Divide Public Utility District (2) Hot Springs Valley Irrigation District (2) San Juan Water District (2) South Fork Irrigation District (2) Yolo County Flood Control & Water Conservation District (2) Yuba County Water Agency (2)
BWGWD	Biggs West-Gridley Water District, et al Butte Water District Byron Bethany Irrigation District Central California Irrigation District Cordua Irrigation District El Camino Irrigation District Firebaugh Canal Water District Friant Power Authority Garden Highway Mutual Water Company (1) Los Molinos Mutual Water Company M&T Ranch Nevada Irrigation District Orland Unit Water Users Association (1) Oroville-Wyandotte Irrigation District Paradise Irrigation District Plumas Mutual Water Company Reclamation District 1004 Richvale Irrigation District Solano Irrigation District Sutter Extension Water District Tudor Mutual Water Company (1A) Western Canal Water District

Alphabetical Listing of Acronyms and Abbreviations Used to Represent Agencies or Individuals Submitting Comments on the Draft EIR

Abbreviation	Commentor Name
BWGWD-2	Biggs West-Gridley Water District, et al (2) Butte Water District (2) Byron Bethany Irrigation District (2) Central California Irrigation District (2) Cordua Irrigation District (2) El Camino Irrigation District (2) Firebaugh Canal Water District (2) Friant Power Authority (2) Garden Highway Mutual Water Company (2) Los Molinos Mutual Water Company (2) M&T Ranch (2) Nevada Irrigation District (2) Orland Unit Water Users Association (2) Oroville-Wyandotte Irrigation District (2) Paradise Irrigation District (2) Plumas Mutual Water Company (2) Reclamation District 1004 (2) Richvale Irrigation District (2) San Joaquin River Exchange Contractors Water Authority (1) Solano Irrigation District (2) Sutter Extension Water District (2) Tudor Mutual Water Company (2) Western Canal Water District (2)
Calaveras Co. WD	Calaveras County Water District
CCWD	Contra Costa Water District
CCWD-2	Contra Costa Water District (2)
CDWA	Central Delta Water Agency RC Farms Inc. Reclamation District 2039 Reclamation District 2072
CFBF	California Farm Bureau Federation
CFWID	Camp Far West Irrigation District, et al Garden Highway Mutual Water Company (1A) Tudor Mutual Water Company (1) Tuolumne Utilities District Woodbridge Irrigation District
Cheeseman	Cheeseman's Ecological Safaris
CSJWCD	Central San Joaquin Water Conservation District
CVCC	Cross Valley Canal Contractors
CVCC-2	Cross Valley Canal Contractors (2)

Alphabetical Listing of Acronyms and Abbreviations Used to Represent Agencies or Individuals Submitting Comments on the Draft EIR

Abbreviation	Commentor Name
CVRWQCB	Central Valley Regional Water Quality Control Board
CWD	Carmichael Water District
DFG	Fish and Game, Department of
DFG-2	Fish and Game, Department of (2)
DWR	Department of Water Resources
EBMUD	East Bay Municipal Utility District
EBMUD-2	East Bay Municipal Utility District (2)
EDCWA	El Dorado County Water Agency
EDCWA-2	El Dorado County Water Agency (2)
EDF	Environmental Defense Fund
EDF-2	Environmental Defense Fund (2)
FWA	Family Water Alliance
FWUA	Friant Water Users Authority
FWUA-2	Friant Water Users Authority (2)
GCID-1A	Glenn-Colusa Irrigation District (1A)
GDPUD	Georgetown Divide Public Utility District
Gore	Sharon Gore
Gorrill	Gorrill Land Company & R Gorrill Ranch Enterprise
GWD	Grassland Water District
HRIA	Hammond Reservoir Irrigation Association
HSVID	Hot Springs Valley Irrigation District
ISD	Ironhorse Sanitary District
KTWD	Kern - Tulare Water District
LADWP	Los Angeles Department of Water and Power
MCWRA	Mountain Counties Water Resources Association
MERCED ID	Merced Irrigation District (2)
MILC	Morrow Island Land Company
Moyle	Moyle
MWD	Metropolitan Water District of Southern California
NCWA	Northern California Water Association
NHI	Natural Heritage Institute
NRS	Natural Resource Scientists, Inc
OUWUA-1A	Orland Unit Water Users Association (1A)
PCC	Davis, City of Putah Creek Council
PCWA-1A	Placer County Water Agency (1A)

Alphabetical Listing of Acronyms and Abbreviations Used to Represent Agencies or Individuals Submitting Comments on the Draft EIR

Abbreviation	Commentor Name
PWD	Proberta Water District
RCRC	Regional Council of Rural Counties
RD830	Reclamation District 830
RGWD	Rag Gulch Water District
Sac	Sacramento, City of
Sac-2	Sacramento, City of (2)
SCBLOC	Stony Creek Business & Land Owners Coalition
SCWA	Solano County Water Agency
SDWA	Banta Carbona Irrigation District South Delta Water Agency/BCID
SDWA-2	South Delta Water Agency/BCID (2)
SEWD	Stockton East Water District
SFID	South Fork Irrigation District
SFPUC	San Francisco Public Utilities Commission
Shasta CWA	Shasta County Water Agency
SJC	San Joaquin County San Joaquin County Flood Control & Water Conservation District
SJRECWA-1A	San Joaquin River Exchange Contractors Water Authority (1A)
SJRECWA-2	San Joaquin River Exchange Contractors Water Authority (2)
SJRG	San Joaquin River Group
SJRG-2	San Joaquin River Group (2)
SJWD	San Juan Water District
SLDMWA	San Luis & Delta-Mendota Water Authority
SLDMWA-2	San Luis & Delta-Mendota Water Authority (2)
Smith	Smith
SMUD	Sacramento Municipal Utility District
SMUD-2	Sacramento Municipal Utility District (2)
SSJMUD	Southern San Joaquin Municipal Utility District
Stanislaus Co.	Stanislaus, County of
Stockton	Stockton, City of
Stockton-2	Stockton, City of (2)
SVRC	Stanford Vina Ranch Company
SVWU	Glenn-Colusa Irrigation District (1) Natomas Central Mutual Water Agency Pelger Mutual Water Company Placer County Water Agency (1) Princeton-Codora-Glenn Irrigation District

Alphabetical Listing of Acronyms and Abbreviations Used to Represent Agencies or Individuals Submitting Comments on the Draft EIR

Abbreviation	Commentor Name
SVWU (Cont.)	Provident Irrigation District Reclamation District 108 Sacramento Valley Water Users South Sutter Water District Sutter Mutual Water Company West Sacramento, City of (1) Yuba County Water Agency (1A)
SVWU-2	Sacramento Valley Water Users (2)
SWC	State Water Contractors
SWID	Shafter-Wasco Irrigation District
TCCA	Tehama-Colusa Canal Authority
TCWA	Thomes Creek Watershed Association
TID	Thermalito Irrigation District
TID&MID	Modesto Irrigation District Turlock Irrigation District & Modesto ID
Trinity Co.	Trinity County Board of Supervisors
TUD-2	Tuolumne Utilities District (2)
USCOE	US Army Corps of Engineers
USDOI	US Dept of Interior
VWPA	Valley Water Protection Association
W. Sac-1A	West Sacramento, City of (1A)
Woodland	Woodland, City of
WRAYC	Yolo County, Water Resources Association of
WWD	Westlands Water District
WWD-2	Westlands Water District (2)
YCFC&WCD	Yolo County Flood Control & Water Conservation District
YCWA-1	Yuba County Water Agency (1)
YCWD	Yuba County Water District

General Comments

Comment: With regard to CEQA, the DEIR inadequately analyzed the impacts of the project, inadequately discussed the proposed mitigation, inadequately analyzed the proposed mitigation for significant impacts on the environment and failed to identify mitigation measures for implementation. Specific mitigation measures were not included in the DEIR. (Butte Co., DWR, DFG, MWD, SFPUC, SJRG, SLDMWA, SEWD, W. Sac, WRAYC, Woodland)

Reply: The analysis and discussion of the impacts of the project and analysis of the proposed mitigation for significant impacts is adequate pursuant to CEQA. These comments address the DEIR in general and do not give specific examples stating where and why the document is inadequate. Thus, a more detailed response to these comments is not possible.

The following proposed mitigation measures will be added to the EIR.

1. Impacts to reservoir fisheries can be lessened through additional fish planting, habitat improvement through planting of shoreline vegetation, or addition of habitat structures. Improved management of shoreline grazing practices is also a potential mitigation option.

2. Shoreline revegetation activities for fish protection can also reduce the visual impact of barren reservoir shorelines due to drawdowns. (mitigation suggested by the DFG)

Following is a list of mitigation measures that were proposed in comments but are not appropriate for inclusion in the EIR. The reason for not including the mitigation in the EIR is explained after each item.

1. The City of West Sacramento suggested that it could pump groundwater into the Sacramento River to help meet the Delta outflow objective in lieu of curtailing its surface water diversion. Technically, this mitigation does not address an environmental impact of the project and consequently is not appropriate for inclusion in the EIR as a mitigation measure.

2. The Water Resources Association of Yolo County suggested that the SWRCB develop mitigation measures that provide financial incentives for farmers to develop and operate conjunctive use facilities, and financial incentives to develop water conservation technologies. They also requested that the SWRCB develop mitigation measures for changed land uses.

The DEIR did not identify any significant impacts associated with changed land use. Thus, mitigation measures were not identified.

Local agencies, but not the SWRCB, might be able to develop programs of financial incentives for conjunctive use facilities and water conservation technologies. Local agencies could develop financial programs as incentives for conservation and conjunctive use, if they have legal authority to do so.

3. The Metropolitan Water District of Southern California stated that re-established riparian vegetation in reservoir drawdown zones could be lost due to refilling. The district expressed concern that loss of this vegetation not become an impediment to refilling. The district requested that the DEIR identify mitigation measures to avoid unanticipated loss of reservoir storage. The MWD appears to be asking for mitigation to prevent a water supply impact. This mitigation does not appear to address a significant environmental effect of the project, and thus is not appropriate to include in

the DEIR. However, inundating vegetation probably would not be an impact that would impede refilling a reservoir, provided there is adequate habitat at the "refill" shoreline.

Comment: The DEIR was released and comments were required in a piecemeal manner. Forcing an arbitrary deadline for submission of comments to the DEIR while the impact discussion is still in development puts the cart before the horse. Such a procedure causes unnecessary confusion and expense to all concerned. (Calaveras Co. WD, PCWA, W. Sac.)

Reply: The SWRCB assumes that the comment refers to the three revised chapters that were released in May 1998. At the time the DEIR was released in November 1997, the parties to the Letter of Intent (Flow Alternative 7) were continuing to negotiate that alternative. Other parties joined the negotiations and the alternative was subsequently revised as the San Joaqin River Agreement (SJRA). Because the SJRA appeared to be a viable alternative, the SWRCB decided to incorporate it into the DEIR. The chapters that were affected by the inclusion of this alternative were revised to incorporate the analysis of the alternative. At about the same time, an error in the modeling of Flow Alternative 5 was detected. The chapters were also corrected to reflect the revisions that resulted from remodeling the alternative. Other chapters of the DEIR were unaffected by either change. The SWRCB provided all parties an opportunity to review the revised chapters and accepted comments on the other chapters from parties who demonstrated their ability to comment on the other chapters was prejudiced by the release of the revised chapters. The requirements of CEQA have been met, and no party was adversely affected by the release of the revised chapters.

Comment: The impacts to the Delta of water exports exceed the impacts, if any, caused by upstream Sacramento and San Joaquin river water users. Impacts to fishery resources dependent on the Delta are due primarily to effects of the Delta export facilities and not to effects of upstream water diversions. Some alternatives in the DEIR seek to solve Delta problems at the direct expense of the upstream counties and watersheds of origin. (BSWA, Butte Co., CDWA, SVWU, SJRG, SDWA, SVRC, SEWD, VWPA, YCWA)

Reply: A common belief held by the commentors is that the biological problems in Bay/Delta Estuary have been caused primarily by project exports and that if the projects were to adequately mitigate those impacts, there would be little residual burden to allocate among upstream parties. This assumption is not entirely correct.

In the summer months, natural inflow to the Delta declines and water is released from upstream project reservoirs to support Delta exports and to maintain Delta outflow. The required Delta outflow serves the dual purpose of supporting fish and wildlife and consumptive beneficial uses of water. Prior to construction of the projects, however, conditions were significantly different in the Delta. Agricultural diversions in the Sacramento basin increased rapidly in the early part of this century. In 1920, these diversions, coupled with a dry year, produced severe salinity intrusion into the Delta. Peak chloride levels at Rio Vista reached 1,000 ppm and flow at Sacramento fell to 500 cfs, far below the level later determined necessary to repel salinity. The CVP was conceived, in part, as a solution to this problem. Upstream diverters continue to have an incremental impact on Delta inflow and outflow.

Flow Alternatives 3 and 4 affect upstream parties most directly. Under these alternatives, water right holders are required to cease diversion when the Delta is in a balanced condition and the projects are releasing stored water for the purpose of meeting inbasin entitlements, including Delta outflow requirements. The analysis in the DEIR, and past experience with Term 91 implementation, shows

these curtailments generally occur during the June to August period. The water quality objectives in the 1995 Bay/Delta Plan apply, in some fashion, to every month of the year.

For the San Joaquin river basin, water right holders must also cease diversions when flow is inadequate to meet Vernalis flow objectives. Delta diversions by the SWP/CVP have no impact on flows at Vernalis.

Some of the objectives place constraints directly on project operations and therefore their implementation must be assigned exclusively to the projects. The Delta Cross Channel closure schedule and the Export/Inflow (E/I) restrictions are examples. Other objectives, while not restricted to the projects, have their primary impact on the projects. The Delta outflow objective between January and June, the X2 objective, is the prime example. The X2 objective when combined with the 35 percent E/I limitation, has the general effect of maintaining the Delta in excess conditions throughout the spring months. These are also the months in which the projects have had the largest impact to species listed under the ESA at the time that the 1995 Bay/Delta Plan was adopted. However, Delta outflow is important to aquatic resources dependent on the Delta in all months. Total Delta outflow is influenced jointly by upstream depletion, consumptive use within the Delta, and Delta exports.

Comment: An issue of concern to ISD is what role, if any, will special districts using Delta Islands, such as ISD which uses Jersey Island, play in the implementation of the mitigation measures proposed in the DEIR. Based on review of the DEIR, it does not appear that special districts will play any role in the implementation of the mitigation measures. (ISD)

Reply: No significant environmental impacts expected within the Delta from implementing the 1995 Bay/Delta Plan, and therefore, no proposed mitigation. All of the significant environmental impacts of the project, and proposed mitigation measures to lessen or avoid these impacts, are identified in the upstream areas. Thus, special districts using Delta Islands probably will play no role in implementing mitigation measures.

Comment: As noted by the DEIR, the Friant service area is already chronically water short. Depriving it of massive amounts of water, especially to provide a relatively small amount of water for salmon doubling, or for Delta objectives, simply cannot be justified in light of the ramifications to the region, the State and the country. The potentially disastrous consequences of a loss of water to Friant Division contractors--which is recognized, if substantially understated, in the DEIR--has even recently been considered by the United States District Court for the Eastern District of California, which concluded that the hardship of such a loss to Friant Division contractors and those who depend upon them would be "devastating." (FWUA)

Reply: Comment noted.

Comment: The SWRCB should examine a free-market approach to meeting the 1995 objectives. (FWUA)

Reply: The SWRCB cannot predict who would be willing to sell water rights in a free-market economy. Therefore, any analysis of a free market approach would be unreasonably speculative. In Flow Alternative 8, part of the Delta flow requirements are met by purchases by USBR from water

users in the San Joaquin Valley. In any event, once responsibilities to meet the objectives are assigned, the responsible parties are free to purchase the requisite water supplies.

Comment: The State Antidegradation Policy, the antidegradation provisions of the Federal Clean Water Act and USEPA regulations require that all significant water quality impacts on Delta water users resulting from a new Bay-Delta project or implementation of a new Water Quality Control Plan be mitigated. CCWD is particularly concerned because even small increases in salinity at its new intake on Old River near Highway 4 could significantly reduce the District's ability to fill Los Vaqueros reservoir with high quality water suitable for blending to meet CCWD's 65 mg/L chloride concentration goal for delivered water. Changes in water quality that impact CCWD's ability to meet this 65 mg/L goal would violate antidegradation policies. (CCWD)

Reply: State and Federal antidegradation policies do not preclude degradation of waters of the State. Arguments regarding application of these policies should be made in the water right hearing.

Comment: The DEIR did not evaluate environmental and economic impacts of reduced water supplies ito the Cross Valley Canal contracting districts. (FWUA)

Reply: Deliveries to USBR contractors via the Cross Valley Canal have not been authorized by the SWRCB. Therefore, the SWRCB is not required to analyze the loss of benefits that might have accrued as a result of those unauthorized deliveries. Furthermore, economic impacts that might result do not require mitigation under CEQA.

Comment: Whichever Flow Alternative is selected, the benefit to the fish and wildlife in the upstream region should take priority over other regions. It seems counterproductive to meet flow objectives in the Delta and other reservoirs and rivers at the expense of species dependent on the quality of habitat in the northern watershed waterways. Care must be taken to insure the re-establishment of endangered and threatened species to limits which allow de-listing. (Gore)

Reply: Comment noted. The DEIR includes an analysis of the effects of the alternatives on fish and wildlife resources in upstream areas. However, the subject of the current proceeding is the implementation of the Bay/Delta water quality objectives in the 1995 Plan. Evaluation of the adequacy of instream flows in the tributary streams to meet fish and wildlife needs is not a part of this proceeding.

Comment: Prior to considering its responsibility under the public trust doctrine, the SWRCB should evaluate the duty of the DWR and the USBR to mitigate the impacts of the SWP and the CVP and their special statutory responsibility over and above this duty. The DEIR fails to do this. Specifically, the DEIR fails to set forth and evaluate the requirements of the Davis-Dolwig Act. (CDWA)

Reply: The DEIR includes a range of alternatives for implementing the 1995 Bay/Delta Plan objectives, including Flow Alternative 2 which assigns full responsibility to the USBR and the DWR. The SWRCB may select a flow alternative other than Flow Alternative 2. If that occurs, any additional responsibility assigned to the DWR and the UBSR because of "statutory responsibilities" would be based on evidence submitted at the water rights hearing. This hearing is the appropriate forum in which to address water right legal issues. See similar general comment in Chapter II.

Comment: Delta fish have been and are being significantly impacted by the operation of the state and federal water projects. Therefore, the incremental impacts resulting from the implementation of the 1995 Bay/Delta Plan could, pursuant to CEQA Guidelines, also be considered as significant. (DFG)

Reply: The changes in the Bay/Delta Plan objectives from the previous objectives were made primarily for the benefit of fish and wildlife.

Comment: The SWRCB must protect prior rights to the beneficial use of water. (Civil Code §1414; Water Code §§1702, 1706.) The Principles of Agreement signed by the CalEPA on December 15, 1994, provides that: "[i]n implementing the [water quality control] plan, the SWRCB will act in compliance with all provisions of law which may be applicable, including, but not limited to, the water rights priority system and the statutory protections for areas of origin." Additionally, Judge Racanelli has stated that "[i]n exercising its permit power the board's first concern is recognition and protection of prior rights for the beneficial use of the water in the stream." (U.S. v. SWRCB (1986) 182 Cal.App.3d 82, 103) (CFBF)

Reply: This is not a comment on the environmental effects of the project.

Comment: The DEIR also fails to advance any alternative which examines the development of conjunctive use of surface water and groundwater as a means of enhancing existing water supplies to assist in achieving the 1995 Bay/Delta Plan objectives. Floodwaters could be captured and artificially recharged for subsequent extraction as a means of increasing water supplies to help offset contributions to achieving Bay/Delta water quality objectives or flow requirements. New conjunctive use arrangements might be a form of "contribution" to the 1995 Bay/Delta Plan for some water users. (FWUA)

Reply: Although a conjunctive use project might be a part of a water user's approach to recovering reductions in water supply resulting from implementation of one of the flow alternatives, it is not itself an alternative for providing water to implement the 1995 Bay/Delta Plan.

Comment: At a fundamental level, the DEIR is flawed because the objectives imposed by the 1995 Bay/Delta Plan for the San Joaquin River are without any basis in science or fact. The Vernalis flow requirements and related aspects of the 1995 Plan are purely negotiated numbers unfounded in scientific data because no such data exist. An EIR which attempts to analyze the impacts of specious objectives cannot, by definition, be a meaningful document. Therefore, until meaningful objectives for San Joaquin River flow and associated criteria are established, the DEIR will be inadequate. (FWUA)

Reply: The objectives contained in the 1995 Bay/Delta Plan were set following a lengthy process which included public hearings, preparation and public review of an environmental document as required by CEQA, consultation with fish and wildlife agencies as required by ESA and CESA, review and approval of the Plan by the California Office of Administrative Law, and review and approval of the Plan by federal EPA as required by the Clean Water Act. The objectives in the Plan received all required approvals and were not overturned by the courts. The purpose of the current proceeding is not to revisit those objectives, but rather to implement them. The adequacy of the objectives to protect beneficial uses in the Delta will be reviewed during the SWRCB's next triennial review.

Comment: PCWA believes that the DEIR circulated by the SWRCB falls significantly short of the standards required by the Legislature and articulated by the courts. It does not provide the decision-makers or the public with an understanding of the consequences of the alternative actions proposed, and cannot ensure that mitigation will be available or effective. (PCWA-1)

Reply: Comment noted.

Comment: In order to support a water market, it is essential to set up and maintain a flow monitoring and accounting system that can distinguish changes in flow due to decreased diversions and purchase of water for instream use. Furthermore, in order to protect acquired supplies, compliance with objectives should be measured without including additional flows purchased for instream use. (In other words, water purchased in the upper watershed for instream use should be allowed to flow all the way to the Bay. It should not be pumped by someone else downstream.) Yet the current objectives (Chloride, EC, NDOI, flow rate, combined export rate) would allow just that, because the amount of water that can be diverted is calculated as some proportion of flow. One of the easiest ways to address this shortcoming is to determine compliance with objectives by subtracting the flow purchased specifically for instream use from the measured flow referenced by the objectives. The DEIR analysis should address this policy decision. (EDF)

Reply: This is not a comment on the environmental effects of the alternatives in the DEIR.

Comment: The DEIR does not provide the public with an environmental assessment which accurately discloses the impacts of the project. For example, the description and documentation in the DEIR of the hydrologic and technical methodology relied upon is so inadequate (including the use of hidden nuances instead of clearly disclosing important results or assumptions) that only the technically trained with the assistance of SWRCB staff are able to comprehend the hydrologic consequences and policy complications of the alternatives. Further, the DEIR fails to present SWRCB analysis in any clear and comprehensible manner. (SFPUC)

Reply: Comment noted. Although the technical analyses in the DEIR are complex, they are comprehensive and can be understood by the non-technical reader.

Comment: The SWRCB has relied upon a large number of other documents, but the degree to which and the manner in which the DEIR relies upon these documents is not clear. No specific references are made and it is up to the reader to guess when the SWRCB is relying upon a separate analysis contained in a document, or a portion thereof, which may or may not be readily available to the public.

The SWRCB must provide an essentially self-contained instrument which the public can understand without undue cross-referencing. Although the DEIR may incorporate by reference other documents, it may only do so by making the documents available to the public and the documents incorporated must be briefly summarized or briefly described. The relationship between the incorporated reference and the DEIR must be described. The mere reference to other material does not provide the public with adequate information and does not suffice for lead agency review. (SFPUC)

Reply: The DEIR contains hundreds of specific citations in the body of the text. These references are listed at the end of each chapter and all are available for inspection at the SWRCB offices. When a citation appears in the text, the information preceding the citation is attributable to the reference

cited. The document is clear when it relies on information and data in another publication and when it merely recognizes another study. The comment gives no specific examples of reference problems, thus, a more detailed response is not possible.

The only document incorporated by reference in the DEIR is the Environmental Report prepared in connection with the adoption of the 1995 Bay/Delta Plan. This document is fully described in Chapter I, page I-7 along with its relationship to the DEIR, and the manner in which it is used. A copy of this document is available from the SWRCB upon request.

Comment: The SWRCB should not adopt an alternative that fails to meet the Vernalis standard. (SDWA-2)

Reply: Comment noted.

Comment: The DEIR circulated by the SWRCB falls significantly short of the standards required by the Legislature and articulated by the courts. It does not provide the decision-makers or the public with an understanding of the consequences of the alternative actions proposed, and cannot ensure that mitigation will be available or effective. (Calaveras Co. WD, W. Sac-1)

Reply: Comment noted.

Comment: The DEIR lacks detailed information concerning the basis of its conclusions. In many circumstances there is no explanation concerning the basis for conclusions that particular alternatives will have a significant effect on the environment or the basis that a particular effect is not significant. The omission of such details makes the Draft EIR inadequate. (WWD)

Reply: Comment noted. Where appropriate, additional detail has been added.

Comment: We strongly believe that the SWP and CVP should meet the Delta water quality objectives even with stored water that was the basis of their development. They are the most junior appropriators. If the projects operated as authorized, then the needs of the Delta should be met by them. (Gorrill)

Reply: Comment noted. This is a legal issue, not a comment on the environmental effects of the project, and will be considered in the water right hearing.

Comment: A significant percentage of California's water supply originates in the mountain region, but most of that supply has already been appropriated by downstream users in the Central Valley or Coastal regions. This has left little water for our fast growing region. We must rely on county and area of origin provisions, such as Water Code Sections 11460 and 10505, to develop additional supplies. The per acre foot cost of development of both storage and distribution in our region is much higher now than it was to others who prior-appropriated and exported water originating in our region. This is of course due to increased environmental costs, inflation, and problems of delivering water in a sparsely populated and mountainous terrain. (MCWRA)

Reply: Comment noted.

Comment: In addressing the concerns of the Bay/Delta, the solutions most prevalent in the 1995 Bay/Delta Plan result in negative effects to upstream locations, mainly in the north. Is it morally correct or even legal, to enhance one ecosystem to the detriment of another? (OUWUA-1)

Reply: This comment does not address the environmental effects of the proposed project. The SWRCB will comply with all legal requirements in issuing its decision.

Comment: The SWRCB should be cognizant of the federal and state law priorities of the Stanislaus River basin counties to New Melones Reservoir water, and should not adopt an alternative which will preclude the USBR from operating New Melones Reservoir in a manner consistent with the Basin priorities. (Stanislaus Co.)

Reply: Comment noted.

Comment: The SWRCB should require the Friant water users to put water back in the San Joaquin River. (Cheeseman)

Reply: Comment noted. Flow Alternative 5 requires releases from Friant Dam for the purpose of providing Delta inflow.

Comment: The DEIR's conclusions that no mitigation measures are available for certain impacts appear to be unsubstantiated. Mitigation measures are suggested where appropriate for some of these impacts. CEQA permits the lead agency to find that mitigation measures are under the jurisdiction of other agencies and that those agencies should adopt them. (Public Resources Code sec. 21081.). Therefore, the SWRCB will not be responsible for all mitigation measures described in the FEIR. This is consistent with the programmatic approach taken by the SWRCB for this project. The following pages in the DEIR deserve your review regarding mitigation: VI-56 to 59, VI-72 to 78, VI-102 to114, VI-116 to 117, VII-66, VIII-35, IX-19, XIII-20, XIII-38, XIII-53, XIII-60, and XIII-67 (DWR)

Reply: Where appropriate, the mitigation proposed by the DWR in its comment letter has been incorporated into the FEIR. To see which of the proposed mitigation measures were added, please see the specific DWR comment where the mitigation measures were proposed. Where a mitigation measure is not incorporated into the FEIR, the reply to the specific comment on the measure explains why it is not incorporated.

Comment: We suggest as mitigation a finding of wasteful and unreasonable use for delivery and use of CVP water to those areas identified by the San Joaquin Valley Drainage Program (the "Rainbow Report") as having selenium drainage problems. It is clear from the historical record that the Trinity River Division was constructed to serve those lands, particularly in the Westlands and Panoche Water Districts. Now that the enormous financial and ecological costs of dewatering one watershed (Trinity) to cause problems pumping that water from the Delta, to then pollute the San Joaquin River and waterfowl ponds (Kesterson) is known, it is clearly a wasteful and unreasonable use of water which should be halted, without cost to the taxpayers. The "saved" water could then be committed to implementing the Trinity River Flow Decision without further impacts to other CVP users and beneficial uses in the Trinity River basin or the Bay-Delta ecosystem. (Trinity Co.)

Reply: This comment is not relevant to the project evaluated in the DEIR. The comment does not address any of the alternatives for meeting the objectives in the 1995 Bay/Delta Plan, nor does the comment address the environmental effects of the project.

Comment: The FEIR should include a comprehensive mitigation and monitoring plan for chinook salmon, delta smelt, and other fish and wildlife as required by Public Resources Code 21081.6. (DFG)

Reply: This comment incorrectly attributes fish entrainment and adverse hydrodynamic impacts to the implementation of the 1995 Bay/Delta Plan. The comment further misconstrues the project description with potential mitigation measures. Fish entrainment and adverse hydrodynamic effects result from water diversions by the SWP, the CVP, and other Delta water users, and are not effects of implementing the 1995 Bay/Delta Plan. In fact, the principal purpose of the project is to increase flow through the Delta and restrict Delta exports to improve conditions for aquatic resources.

The comment also misconstrues the objectives of the 1995 Bay/Delta Plan, specifically export reductions, habitat improvements, and operation of the Delta Cross Channel Gates, as mitigation measures. These actions and others to protect beneficial uses of water in the Delta comprise the project. The SWRCB is not the agency responsible for fish entrainment and other adverse effects that the 1995 Bay/Delta Plan is intended to help correct. Thus, the SWRCB is not the appropriate agency to develop and implement a comprehensive mitigation and monitoring program for those effects.

Specific mitigation measures have been identified throughout the EIR. Mitigation required by the SWRCB decision will be based on evidence received at the hearing.

Comment: The DEIR fails to analyze the impacts of the various water diversions, facilities and operations. The 1995 Bay/Delta Plan objectives for fish are fashioned, in part, to satisfy ESA requirements imposed on operations of the SWP and CVP. The impacts of the SWP and CVP should be clearly identified so that SWP and CVP responsibilities including those pursuant to CEQA, NEPA, Water Code sections 12200 et seq., 11460 et. seq. and 11900 et seq. can be identified. (CDWA)

Reply: The alternatives in the EIR assign varying levels of responsibility to the SWP and the CVP up to full responsibility for meeting the Plan objectives. The SWRCB will determine the appropriate level of responsibility to assign to the SWP and CVP based on evidence received at the hearing.

Executive Summary

Comment: It may be helpful to your readers to create a summary chapter or table in the FEIR of impacts, level of significance, mitigation measures, responsibility for implementation of mitigation measures, and residual impacts after mitigation. (DWR)

Reply: Comment noted. The summary chapter has been revised.

Comment: [page 01] Area of Origin statutes were designed to protect the very watersheds this Plan is proposing to strip. Keeping this in mind, the SWRCB's goal to "Provide comprehensive, multi-species protection for the public trust resources of the Bay/Delta Estuary" (page II-1) should not be implemented at the expense of the public trust resources of the upper (north of Delta) watersheds. (TCCA)

Reply: Impacts to reservoir fisheries are generally temporary and mitigable. Many of the reservoir fisheries originated from stocking programs, and some continue to be supported through stocking.

Regarding area of origin, the comment is noted. This is not a comment on the environmental impact of the proposed project.

Comment: [page 01R] In describing Flow Alternative 8, the DEIR states that "If additional water is needed to meet the Vernalis target flows, the San Joaquin River group provides up to 110,000 TAF". CCWD assumes that this is a typographical error and that the actual value is 110,000 Acre-feet/year. (CCWD-2)

Reply: The text should have read "110 TAF." The correct value will be used in the FEIR.

Comment: [page 01R] The analysis of Flow Alternative 8 is inadequate because the analysis does not include all aspects of the SJRA, and does not recognize the tentative nature of the agreement or the resulting impacts if the SJRA is dissolved. The DEIR should include an analysis of the effects of a head of Old River barrier, the impact of using hatchery fish on wild salmon, and the impact of granting Favored Purchaser status to the USBR for water sold by the SJRGA during the pulse flow period. (EDF-2)

Reply: The only actions related to the SJRA that the SWRCB is considering implementing are the flow-related measures. The environmental effects of the flow-related measures are described in Chapters V and VI. The SJRA does not require barrier construction; however, a programmatic-level analysis of the barriers is included in Chapter IX. Other measures, such as release of hatchery reared salmon and Favored Purchaser status of the USBR by the SJRG are subject to the authority of entities other than the SWRCB. Predicting what will occur if the SWRCB requires imposition of the SJRA flow-related measures and the parties dissolve the agreement is too speculative to evaluate.

Comment: [page 02] The DEIR should evaluate impacts to recreation on the American River using appropriate significance criteria for appropriate months of the year. The high recreation use period of the year on the lower American River is the summer, primarily July through September. An appropriate minimum flow for use in the DEIR would be 1,750 cfs. Flows above 6,000 cfs are

recognized as unsafe and result in the broadcast of warning by Sacramento County. Consequently, for purposes of this DEIR analysis, the minimum and maximum flow range that is adequate for boating and rafting opportunity on the lower American River should be 1,750 to 6,000 cfs.

In addition to considering the minimum and maximum adequate flows for rafting and boating, the DEIR should address the potential for implementation of the alternatives to result in river flows outside of an optimum range. Based on the opinions of raft rental outfitters and information provided by Sacramento County during the Hodge case (SWRCB, 1988), it appears that the appropriate optimum flow range for recreation would be 3,000 to 6,000 cfs. (PCWA-1)

Reply: The impacts to recreation on the American River below Lake Natoma are addressed in Table VI-68 of the DEIR. The period of analysis which is identified as the Peak Season (May through September) is consistent with the CVPIA PEIS analysis of recreation impacts, as are the threshold flows. The analysis in the DEIR does address the potential for average monthly flows to fall below 1,750 cfs. No significant impact was identified in comparing the flow alternatives to the base case. An analysis of the frequency with which average monthly flows would fall within the range of 1,750 to 6,000 cfs or exceed 6,000 cfs during the peak season showed that there are no significant impacts when comparing the flow alternatives to the base case.

In response to this comment, an analysis of the frequency with which average monthly flows would fall within the range of 3,000 to 6,000 cfs during the July-September period was made. For the 73-year period, there was no significant difference between the base case and the flow alternatives. For the critical period, the frequency of occurrence was less than the base case for all alternatives. However, since the opinion of what constitutes the lower end of the optimal flows is not well defined, this is not considered to be a significant impact.

Comment: [page 03] Paragraph 1of the summary should indicate that there are other significant impacts associated with some of the joint points alternatives beside effects on upstream reservoirs. (DFG)

Reply: The summary will be revised to include all significant environmental effects identified in the chapter on the joint point alternatives.

Comment: [page 01R] The VAMP with a barrier at the head of Old River is an appropriate alternative to implementing the 1995 Bay/Delta Plan as proposed in the EIR. (SJRG)

Reply: Comment noted.

CHAPTER I. INTRODUCTION

Comment: [page 01] The DEIR incorrectly assumes the validity and finality of the 1995 Bay/Delta Plan. In their March 10, 1995 papers, the Area I landowners argued (at 16-26) that the Bay/Delta Plan cannot contain flow or operational restrictions which affect the quantity of water capable of being delivered to the Area I landowners. The inclusion of such restrictions, either as water quality objectives or otherwise, is not authorized under the Porter-Cologne Act, the Water Commission Act or any other authorities. The arguments were never effectively rebutted.

In their March 10, 1995 document, The Area I landowners requested (at 3-4) that the SWRCB make it clear that the Bay/Delta Plan was not final with respect to its flow and operational restrictions and did not constitute an indirect adjudication of water rights. The SWRCB did so. In the Bay/Delta Plan (at 4) it stated that "[i]f necessary after the water rights proceeding, this plan could be amended to reflect any changes that may be needed to ensure consistency between the plan and the water right decision."

The DEIR is defective because it does not take into account changes to the Bay/Delta Plan made necessary pursuant to the upcoming water right adjudication. The Bay/Delta Plan specifically did not address the Area I landowners' water rights. The Bay/Delta Plan must be periodically reviewed and may be revised. Water Code section 13240. (Area1)

Reply: This is not a comment on the environmental effects of the proposed project. The SWRCB is not conducting a water rights adjudication, it is implementing the 1995 Bay/Delta Plan by determining the responsibilities of water right holders. The SWRCB will review the adequacy of the objectives during the triennial review process.

Comment: [page 01] The DEIR does not contain information or evidence which supports the assumption that those water users included in any of the alternatives affect the beneficial uses to be protected or in what proportion. The EIR must discuss the adverse impacts to the beneficial uses protected by the objectives. The EIR must analyze and attribute responsibility to water right holders for those impacts. Only those water right holders who have been responsible for adversely impacting the Bay/Delta watershed may have conditions imposed upon their water rights; and only then in proportion to their contribution to the impact. The SWRCB appears to invoke the authority of the public trust in order to skip the step outlined above, and make the leap of faith that all water users of a certain size are responsible in some pro-rata proportion for the decline of the Bay/Delta watershed. Such equitable apportionment is supported neither in law nor in fact. (SEWD)

Reply: The 1995 Plan contains four types of objectives: (1) flow objectives, (2) salinity objectives, (3) dissolved oxygen objectives, and (4) operation criteria for the SWP/CVP. The purpose of the flow objectives is to protect fish and wildlife beneficial uses in the Bay/Delta. The basis for the adoption of these objectives is discussed in the ER for the 1995 Plan, which is incorporated into the EIR by reference. The flow objectives generally control upstream operations. Each of the flow alternatives assigns responsibility for meeting the flow objectives to upstream water right holders, although the method for assigning responsibility for the objective changes from alternative to alternative. Each of these water right holders has an incremental depletionary effect on Delta inflow and outflow. Therefore, it is reasonable to look to those water users causing a depletion to Delta inflow when additional flow is needed to support instream public trust uses. The specific responsibility assigned to each water right holder will be determined based on evidence received at the hearing, including any evidence submitted regarding specific impacts.

Section B.1. BACKGROUND, Institutional Setting

Comment: [page 02] The DEIR fails to discuss State Antidegradation Policy (SWRCB Resolution No. 68-16), which states that whenever the existing water quality is better than that defined by State water quality objectives and policies, such existing high water quality will be maintained until its has been demonstrated that any change will: (1) be consistent with the maximum benefit to the people of the State; (2) not unreasonably affect present and anticipated beneficial use of such water; and (3) not result in water quality less than that prescribed in water quality control plans or policies. It is possible for a given implementation alternative to result in significant water quality impacts, even if the alternative does not cause specific water quality parameters to exceed State water quality objectives. (CCWD)

Reply: The State Antidegradation Policy applies to discharges of pollutants. This policy does not apply to the alternatives discussed in the EIR as none of the alternatives under consideration involve any discharges of pollutants to State waterways.

Section B.1.b. Water Right System

Comment: [page 04] The first paragraph states that the CVP and SWP are responsible pursuant to Order WR 95-6 for meeting Bay/Delta water quality objectives. As the SWRCB has acknowledged many times, Order 95-6 did not impose any obligation upon the CVP or the SWP for compliance with the 1995 Bay/Delta Plan. (SEWD)

Reply: Order WR 95-6 amends the permit conditions of the DWR and USBR to eliminate inconsistencies between those imposed by Decision 1485 and those in the 1995 Bay/Delta Plan and the Biological Opinions. The text in the FEIR has been amended to state that the SWP and the CVP are responsible, pursuant to D-1485, Order WR 98-9, and the federal Biological Opinions, for meeting Bay/Delta water quality objectives in the Bay/Delta Plan.

Comment: [page 04] The statement is made that the watershed protection statute accords first priority to water rights for use "within the watershed." This is not correct. The watershed protection statute also accords first priority to water rights for use in areas immediately adjacent to the watershed that can be conveniently served thereby. (SEWD)

Reply: The text has been revised to reflect this comment.

Section B.2. History of SWRCB Action

Comment: [page 06] The DEIR should be clarified to emphasize that there is no difference between the Principles Agreement and the 1995 Bay/Delta Plan with respect to these protections in achieving the desired water quality objectives. (Shasta CWA)

Reply: The 1995 Bay/Delta Plan was consistent with, but not exactly the same as, the Principles Agreement. The protections afforded by both are considered equivalent.

Section C. LEGAL CONSIDERATIONS REGARDING PREPARATION AND USE OF THIS REPORT

Comment: [page 07] The DEIR should specify a preferred alternative and should adequately disclose the impacts of implementing the preferred alternative. Chapter I states that the preferred alternative will be the same as the water right decision adopted by the SWRCB. This procedure violates CEQA in that the FEIR must be certified before adoption of the decision. (BWGWD, OUWUA, Shasta CWA, SFPUC, SVWU)

Reply: A DEIR is intended to provide decision makers with an understanding of the consequences of possible alternatives. Therefore, CEQA does not require a DEIR to specify a preferred alternative (CEQA Guidelines §15120(c)). The flow alternatives identified in the DEIR disclose the full range of impacts that would be expected from implementation of the 1995 Bay/Delta Plan.

The SWRCB will certify the FEIR without a preferred flow alternative prior to adopting a water right decision. The SWRCB will select an alternative following the conclusion of the Bay/Delta water right hearings based on the significant environmental impacts identified in the DEIR and on testimony and evidence submitted by the parties. If the SWRCB determines that the selected alternative may result in significant impacts not previously disclosed, the SWRCB will circulate a supplemental EIR and will provide interested parties an opportunity to comment on those impacts. The text in Chapter I will be amended to reflect this course of action.

Comment: [page 07] The DEIR states that it does not identify a preferred alternative, but that the FEIR will contain a preferred alternative that will fall within the range of potential alternative actions described and analyzed within the DEIR. It goes on to state: "The preferred alternative will be the same as the water right decision adopted by the SWRCB." In these circumstances, it is appropriate for the DEIR not to identify a preferred alternative. However, if "preferred alternative" is synonymous with "environmentally superior alternative," it is inappropriate for the DEIR to prejudge that the preferred alternative identified by the FEIR will be the same as the water right decision adopted by the Water Board. Under CEQA, upon appropriate findings and the adoption of appropriate mitigation measures, it would be permissible for the Water Board to adopt an alternative other than the environmentally superior alternative. (WWD)

Reply: Comment noted. The FEIR does not identify a preferred alternative.

Comment: [page 08] The 1995 Bay/Delta Plan established objectives to protect the Delta environment. It is important to stress that the impact associated with establishing the objectives and the environmental impacts associated with these objectives were already fully addressed in the 1995 Environmental Report for the 1995 Bay/Delta Plan. This DEIR properly did not reexamine these issues. (DWR)

Reply: Comment noted.

CHAPTER II. PROJECT DESCRIPTION

Comment: The DEIR fails to adequately define the Project, the Project Goals, the alternatives and how the alternatives would achieve the Project Goals. (BWGWD, BSWA, Butte Co., DFG, SVWU, SFPUC, SJRECWA, SJRG, SVRC, SEWD, WWD)

Reply: This information is disclosed in detail in Chapters II, and V through X of the DEIR. A paragraph summarizing the conclusions of the SWRCB's analysis has been added to the executive summary to aid the reader. The descriptions of many of the alternatives have been clarified, and in some cases, expanded to provide more detail.

Comment: The SWRCB should determine whether water is being wasted or unreasonably used pursuant to Article X, section 2 of the California Constitution or whether water being used is causing harm to the public trust. If water is being wasted, unreasonably used, or used to the detriment of the public trust by a party, the DEIR should identify the party and should require that party to cease its wasteful or unreasonable use of water, and the water should be applied towards meeting the 1995 Bay/Delta Plan objectives rather than requiring water users who are using water efficiently and reasonably to reduce or cease diversions. (BWGWD, EBMUD, FWUA, SDWA)

Reply: Comment noted. This comment does not address the environmental effects of the project alternatives. The SWRCB will review the hearing record for this project and will take appropriate action based on the evidence in the hearing.

Comment: It is difficult to discern from the DEIR what is meant by "east side tributaries." The description of Flow Alternative 5 in Chapter II states assumptions made for the Sacramento Basin and east side tributaries. The Cosumnes, Mokelumne, and Calaveras Rivers are identified in Chapter III as part of the San Joaquin River Basin. Therefore, if "east side tributaries" is intended to mean the Cosumnes, Mokelumne, and/or Calaveras Rivers, it is inappropriate to distinguish them from the San Joaquin Basin in the description of Flow Alternative 5. (USDOI, WWD)

Reply: As explained in the introduction to Chapter III, the environmental setting is organized essentially by the major hydrologic regions as defined in DWR Bulletin 160-93. Much of the source information used in the discussion of the environmental setting is organized that way. Bulletin 160-93 includes the eastside streams (Cosumnes, Mokelumne, and Calaveras rivers) in its discussion of the San Joaquin River Region and the area encompassed by them is similarly treated in the environmental setting of this EIR. However, for the purpose of establishing the flow requirements for Flow Alternatives 3, 4, and 5, the eastside streams are treated similarly with the Sacramento River tributaries because they cannot physically contribute flows to the San Joaquin River to help meet the Vernalis objectives.

Comment: [page 01] The Draft EIR seems to suggest that the Board can amend existing water rights to implement the 1995 Bay/Delta Plan via the exercise of the Board's powers and Article X, Section 2 of the California Constitution. However, there have been no allegations of any wasteful or unreasonable use of water by any water rights holder in the context of the pending hearing, and the hearing notice does not include any such allegations or provide notice to any water rights holder as to allegations of wasteful and unreasonable use. Therefore, while as a general proposition it is true that the Board has the power to amend water rights under Article X, Section 2 of the California

Constitution, it does not have that authority in the context of the pending water rights hearing based on the notice of that hearing. Therefore, to the extent the Draft EIR assumes the Board has the power to reallocate water rights under the authority of Article X, Section 2, the Draft EIR is defective. (FWUA)

Reply: Comment noted. This comment does not address the environmental effects of the project. This argument should be raised in the context of the water right hearing.

Comment: [page 01] The DEIR states that the SWRCB has authority under Article X, Section 2 of the California Constitution to limit groundwater pumping if the method of diversion is unreasonable. The DEIR also states the SWRCB has authority under Water Code sections 2100 and 2101 to file an action in Superior Court to restrict pumping, impose physical solutions, or both, to prevent the destruction of, or irreparable injury to, the quality of groundwater. The scope of the SWRCB's authority over groundwater is overstated in the DEIR, and no alternative which assumes the broad authority asserted in the DEIR should be adopted by the SWRCB. (FWUA)

Reply: Comment noted. This is not a comment on the environmental effects of the project alternatives.

Comment: [page 01] The DEIR states that a water right decision will be implemented by the SWRCB under the authority granted by Water Code section 275. Nothing in the Notice of Hearing or in the DEIR indicates that the Sacramento Valley Water Users are using water in a wasteful or unreasonable manner. This reference, accordingly, should be removed. (SVWU)

Reply: This comment does not address the environmental effects of the project. Furthermore, the SWRCB will consider any evidence in the hearing record regarding waste and unreasonable use by water users, and may take appropriate action based on the record.

Section A. PROJECT DEFINITION

Comment: [page 01] The DEIR is inadequate because it lacks a complete description of the project, fails to do a complete job of analyzing the environmental effects of additional exports for the Delta caused by some alternatives, and fails to disclose the legal, political, economic, and environmental significance of assigning flow responsibility in the Delta to upstream water, environmental and land use interests. (RCRC)

Reply: The project is adequately described in Chapter II. Exports are reduced under all of the flow alternatives in comparison to the base case. CEQA does not require that an EIR disclose the legal and political significance of the project. Without an explanation of why the commentor thinks the DEIR inadequately discloses the economic and environmental effects of the project, the comment cannot be further addressed.

Section B. STATEMENT OF GOALS

Comment: [page 01] The water right decision will have far reaching effects beyond the estuary, particulary with respect to certain flow alternatives and the joint point petition. A stated goal for the water right decision should be to protect ecosystems in the upstream areas and species which exist independent of the estuary. Goal 3 should be amended to protect areas and watersheds of origin in addition to protecting prior water rights. (DFG, SEWD)

Reply: The 1995 Bay/Delta Plan was developed to protect beneficial uses of water in the Bay/Delta Estuary. Implementation of the plan may affect upstream areas but protection of these areas is not a principal goal of the project. Therefore, the addition of the suggested goal statements are not appropriate.

Comment: [page 01] The SWRCB's goals 3 and 6 are incompatible. The equitable distribution of responsibility of meeting the Plan objectives (Goal 6) cannot be achieved while protecting prior water rights (Goal 3).

Additionally, Flow Alternatives 3, 4 and 5 should not be adopted because they do not meet the goals for the project set forth in the DEIR. These alternatives do not protect prior rights (Goal 3) and Alternative 5 does not advance the goal of providing regulatory stability through the administration of water rights (Goal 2). (Butte Co., SJRG, SVWU)

Reply: Comment noted. All of the alternatives do not equally achieve the project goals. Specifically regarding Goals 3 and 6, these goals are not necessarily incompatible because application of the water right priority system could be construed as an equitable allocation method.

Section C. BAY/DELTA PLAN OBJECTIVES

Comment: [page 01] Setting flow objectives to protect beneficial uses is a waste and unreasonable use of water if non-flow measures could achieve the same protections. To the extent that the intended benefits of either the Bay/Delta Plan numerical or narrative objectives can be realized by means other than additional flow of water, the DEIR should consider those non-flow actions. (BWGWD, SFPUC, SJRGA)

Reply: This comment assumes that the purpose of the current proceeding is to determine what objectives should be set to protect beneficial uses. This assumption is incorrect. The SWRCB specified the objectives in the 1995 Plan after a series of public hearings. The purpose of the current proceeding is to implement those objectives, not to revisit them. The 1995 Bay/Delta Plan contains numeric objectives for flow. Those objectives can only be met through the provision of flow. Further, the SWRCB has considered non-flow measures where flow is not expressly required (see Chapters VII, VIII, IX, and X). Lastly, regarding the narrative objectives, the SWRCB has not assumed that additional flows will be necessary to achieve these objectives, but rather has assumed that implementation of the objectives in combination with other non-flow actions being pursued apart from this project may achieve the narrative objectives.

Comment: [page 01] The DEIR fails to provide implementation mechanisms to ensure that the narrative objectives for salmon doubling are met. (BISF, EDF, DFG, RCRC, USDOI)

Reply: Many anadromous fish restoration actions other than flow-related actions are currently being implemented or are planned by other state and federal agencies. Many of these actions are planned under the CVPIA or the CALFED Bay/Delta programs. When these actions have been implemented and monitored, the SWRCB will reevaluate the need for additional protection measures during the Bay/Delta Plan triennial review process.

In recent years, there has been considerable progress toward meeting the CVPIA goals for fall-run chinook salmon. Estimates for winter and spring-run chinook, however, have fallen far short of meeting CVPIA goals. Population estimates for Central Valley streams in recent years are:

	AFRP Goals	1995	1996	1997	3-Year Ave.
Fall run	750,000	761,234	464,642	629,596	618,482
Late-fall run	68,000	adult population estimates not available			
Winter run	110,000	4,633	2,034	4,726	3,798
Spring run	68,000	11,434	3,959	5,191	6,861
(Total:)	990,000	777,301	470,635	639,486	629,141
Steelhead Trout	13,000	adult population estimates not available			

(Data are taken from the USFWS CVPIA Comprehensive Assessment and Monitoring Program Annual Report (1995-1997).)

Population estimates do not include all of the minor tributaries that were used to establish the AFRP goals. Late fall-run salmon were included in the fall-run population estimates for 1995-1997.

Comment: [page 01] Large numbers of San Joaquin fall-run chinook salmon may emigrate as fry from January through March. Protection of diverse salmon life history strategies may be crucial in maintenance of genetic viability of this stock over time. The 1995 Plan does not include flow objectives adequate to protect emigrating San Joaquin fall-run chinook salmon fry from January through March. (DFG)

Reply: The EIR evaluates alternatives for meeting the objectives in the 1995 Bay/Delta Plan. Several objectives in the Plan were designed to provide protection for critical life stages of San Joaquin fall-run chinook. If additional protection measures are recommended for other lifestages and time periods, they may be addressed when the objectives are reviewed in the SWRCB triennial review process.

Comment: [page 01] What is the relationship between Vernalis flow required by the Plan and Vernalis flows contemplated by the CVPIA and CALFED? (FWA)

Reply: The flow targets for the CVPIA are the same as the 1995 Bay/Delta Plan. The CALFED Program has not established flow targets. In general, the CALFED Program has expressed support for the VAMP which has lower Vernalis flow targets than Bay/Delta Plan flow objectives.

Comment: [page 02] In addition to the water quality objectives for Contra Costa Canal, there is also a chloride objective of 250 mg/L for West Canal at mouth of Clifton Court Forebay, Delta-Mendota Canal, Barker Slough at North Bay Aqueduct Intake, and Cache Slough at City of Vallejo Intake.

The model analyses conducted with model runs on VI-8, XII-24, and XIII-20 should show the impacts on chloride concentrations at these four sites. (DWR)

Reply: The model assumptions used by the SWRCB requires that chloride concentrations at or below 250 mg/l be maintained at these four sites, and operates the SWP and CVP accordingly. Therefore, no significant salinity impacts should occur at these sites. The SWRCB does not believe that inclusion of these stations will provide additional information regarding impacts to the environment or contribute information vital to selection of a preferred alternative.

Comment: [page 03] The presence of an electrical conductivity objective at Brandt Bridge (C-6 RSAN073) and the intended flow benefit of a) the Vernalis flows and b) the Head of Old River Barrier, may best be facilitated by adding a flow gauging station at this site. It is not currently required in Table II-2 but flow measurement at Brandt Bridge is very important to avoid reliance on a calculated flow. Due to the importance and sensitivity of the relationship between flow and salmon survival, salinity, and dissolved oxygen actions in the San Joaquin River between the Head of Old River and Stockton we believe it is in the affected parties best interests to resume flow measurements at the Brandt Bridge station as a component of this SWRCB action. (DFG)

Reply: The scope of the EIR is limited to consideration of a water right decision to allocate responsibility for implementing flow-dependent objectives of the 1995 Bay/Delta Plan. The comment requests changes in the 1995 Bay/Delta Plan, and is not within the scope of the EIR or Bay/Delta Hearing proceedings. This request should be brought up at the SWRCB's next triennial review of the Plan.

Section D. EXISTING CONDITIONS

Comment: [page 13] The existing conditions in the Bay/Delta are not adequately discussed if the SWRCB intends to perform a public trust balancing or evaluate the reasonableness of all water uses in the Central Valley in the hearing. The SWRCB's water rights decision should include a public trust analysis that evaluates protection of economic, sociological and related values. (RCRC, FWUA)

Reply: This is not a comment on the environmental effects of the alternatives in the DEIR, but is a comment on the contents of the water right decision. The point of the comment should be raised in advocacy during the water right hearing.

Comment: [page 13] The base case conditions and the flow alternatives should include implementation of the CVPIA and ESA requirements validly imposed on winter-run chinook salmon and delta smelt. (FWUA, SDWA, SFPUC, SJRG, EDF)

Reply: The base case conditions used in the modeling include some provisions of the CVPIA. Prior to commencing its analysis, the SWRCB requested and received from the USBR suggested operating rules for the CVP in accordance with the CVPIA (letter dated April 26, 1996). The SWRCB reviewed the recommendations and included appropriate suggested rules in the modeling studies for the flow alternatives. These rules are identified in Chapter IV of the EIR.

Chapter IV explains that not all aspects of the CVPIA were included in DWRSIM modeling because implementation of the CVPIA flows is being litigated. Until the litigation regarding the implementation of the CVPIA is complete, possible CVPIA requirements are speculative.

There are two sets of ESA requirements relevant to this comment: the NMFS Biological Opinion for winter-run chinook salmon and the USFWS Biological Opinion for delta smelt. The upstream requirements of the NMFS Biological Opinion are included in the base case and the other alternatives. The Delta actions imposed for winter-run chinook are the same as some of the requirements of the 1995 Bay/Delta/Plan. These actions are not included in the base case, but they are included in the other alternatives. The actions were not included in the base case for the ER, prepared in support of adoption of the Bay/Delta Plan, because its inclusion would have made the SWRCB's action essentially the same as the existing condition. The base case for the ER and the EIR are the same because they are part of the same project.

The 1995 Biological Opinion for the delta smelt contains essentially the same Delta requirements as the 1995 Bay Delta Plan but it does identify different operating criteria during the April-May 30-day pulse flow. These criteria are not included in the modeling for the base case or the other alternatives. The export criteria during the pulse flow period are that combined SWP and CVP exports may be the greater of 1,500 cfs or 100 percent of the Vernalis flow, which are the same as the export objectives in the 1995 Bay/Delta Plan. The Biological Opinion also includes the following statement regarding exports and Vernalis flows during the pulse flow period:

> "Reclamation will pursue acquisition of additional flow (acquired flow) to provide San Joaquin flows at Vernalis during the April and May 30-day pulse in excess of those exported by the CVP and SWP. Any such acquired flows will be identified as being in excess of those attributable to CVP releases, unregulated accretions, or unstorable flows. Through the CALFED process and other associated discussions, Reclamation and DWR will encourage measures that will minimize the diversion of acquired flows during the 30-day pulse flow period. An Operations Plan shall be submitted to the Service by April 1 of each year describing Reclamation's and DWR's Delta operations and forecasted San Joaquin River flows during the Aril and May 30-day pulse flow. The objective of this Operations Plan is to provide a flow at Vernalis that exceeds CVP plus SWP export by an amount equal to 50 percent of the identifiable pulse flow associated with the most recently available forecasted San Joaquin 60/20/20 Index (at 90 percent of exceedance). In an effort to accomplish this goal, Reclamation and DWR will also consider re-allocation within the Principles for Agreement or other means to provide Vernalis flows or Delta exports consistent with this objective."

The increased flows called for in the Biological Opinion are purchased flows. In general, commitments by parties to secure purchased flows are not included in modeling because of the uncertainty of their source and availability, especially in dry years when they are most necessary. The Biological Opinion also calls for DWR and the USBR to consider reducing exports within the confines of the Principles for Agreement (i.e. no net loss of water to the projects). This provision is too speculative to incorporate into the modeling.

Since the adoption of the 1995 Biological Opinion, the SWP and the CVP have planned or executed reduced exports during the pulse flow period. However, these last four years have all been wet years, and the reduced exports have not substantially affected the project's yield as they might in drier years. In addition, provision has been made to make up any lost exports later in the year.

Overall, an attempt to model the recommended export/flow conditions described in the Biological Opinion during the pulse flow period appeared too speculative to provide useful information.

In addition to these concerns, inclusion of possible Biological Opinion export restrictions would confound the analysis of the effects of the SWRCB's decision. The DEIR is intended to analyze the

effect of implementation of the 1995 Bay/Delta Plan in relation to the D-1485 base case. If potential Biological Opinion export restriction were included in the analysis, the effects of the export restrictions would be embedded in the analysis.

Comment: [page 013] Using the 1984-1994 period to estimate existing conditions for aquatic resources is inappropriate because six consecutive years of this ten year period were a prolonged drought. The choice of this period does not account for the needs of water users. (DFG, SCBLOC, SVWU, TCCA, TCWA, WWD)

Reply: Analyses of existing aquatic resource conditions were actually based on a much broader period than 1984-1994, and the FEIR has been revised accordingly. The recent historic period used for aquatic resource assessment varied for each of the species considered, depending on the availability and suitability of data to represent existing conditions.

The reference period for analysis of the Bay/Delta Plan's potential impact on water supplies is clearly specified in Chapter 5. Average deliveries are presented for the period 1922-1994, and for the critically dry period 1928-1934.

For the purpose of establishing the USBR's inbasin obligation to their Sacramento Valley Water Settlement and project water contractors, used in the analysis of Flow Alternatives 3 and 4, the period 1982-1989 (excluding 1983, an extremely wet year) was used. Deliveries to CVP contractors during this period were at their historic high point.

Comment: [page 14] The DEIR is flawed because it does not include the Cross Valley Canal in its Base Case. (CVCC, FWUA)

Reply: The delivery of water diverted at Clifton Court Forebay to users along the Cross Valley Canal is not authorized by the SWRCB. The SWRCB will decide as a result of the water rights hearing whether to authorize those deliveries.

Comment: [page 13] Hydrology is modeled at the present level of development. Model assumptions should be based on depletions caused by future levels of development, especially in the Sacramento River watershed. (Shasta CWA)

Reply: A principal purpose of the EIR is to analyze the effect of alternatives under existing conditions. The 1995 level of development constitutes baseline conditions for the purposes of analyzing effects of the 1995 Bay/Delta Plan. Future conditions were forecasted and these forecasts were incorporated in the cumulative impact analysis contained in Chapter 12.

Comment: [page 13] The DEIR contains a fundamental flaw with respect to its "No Project" alternative. The CVPIA dedicated and required the annual management of 800,000 acre-feet of CVP yield for fishery restoration purposes by the USBR (CVPIA, section 3406(b)(2)). Current practice and Interior policy "credit" any CVP impacts resulting from implementation of the Plan towards the CVP's obligation to provide the dedicated project yield. Under this scenario, implementation of the Bay/Delta Plan does not increase the obligation of CVP contractors. If the SWRCB sustains this interpretation, the impacts of alternatives for implementing the Plan on CVP water supplies is zero. (EDF)

Reply: How the USBR accounts for CVPIA section 3406 b(2) water is not an issue that the SWRCB needs to consider in allocating responsibility for meeting the objectives in the 1995 Bay/Delta Plan. See also response to comments on base conditions.

Comment: [page 13] The reference period of 1984-1994 is inappropriate for San Joaquin fall-run chinook salmon. Although the adult spawning escapements in the early part of this period were high, the full range of hydrology associated with and generally responsible for the healthy spawning runs south of the Delta in 1984-85 is not included in the reference hydrology from 1984-1994. The recent high salmon populations there resulted from the hydrology 2-3 years prior to the reference period chosen. (DFG)

Reply: In the salmon smolt survival modeling, smolt survival was estimated over the entire 73-year period of hydrologic record for each of the alternatives, not only 1984-1994. Text in Chapter II has been revised accordingly.

Comment: [page 13] As set forth above, the existing condition is defined as D-1485 and the upstream Biological Opinion (BO) for winter-run salmon. However, it is not clear which BO the DEIR is referencing in this instance and whether the intention is to include a BO in the existing condition or throughout the analysis. (SFPUC)

Reply: The upstream conditions in the 1993 Biological Opinion for winter-run chinook salmon are included throughout the EIR in the base case (Alternative 1) and the other alternatives.

Reference: National Marine Fisheries Service. Biological Opinion for the Operation of the Federal Central Valley Project and the California State Water Project. February 12, 1993.

Comment: [page 13] The Plan's Existing Conditions section discusses conditions, including hydrology, land and water use, during the time frame of 1984-1994 "to take into account the natural variability with out misstating the current demands..." (page II-13). It must be noted that this time frame included five years of drought. Normal conditions, or a combination of wet, normal, dry, critically dry years, could change all aspects of the Plan. To more accurately reflect actual conditions, the time frame should be expanded to as close to present as possible, at least to include data through 1996. (TCCA)

Reply: See response to general comment for Chapter II, section D, page 13. Since the Bay/Delta Plan was adopted in 1995, the baseline period does not include years later than 1994.

Comment: [page 13] The existing conditions section should include a full description of the effects of the CVP on the San Joaquin River and the Sacramento San Joaquin Delta. As previously presented to the Board, and as will be presented in testimony later on in these proceedings, operation of the CVP results in an average annual decrease in San Joaquin River flows of 553,000 acre-feet, with 345,000 acre-feet of that decrease occurring from April through September. In addition, the CVP operations have resulted in large amounts of saline discharges into the San Joaquin River as well as a buildup of salts in the west side of the San Joaquin Valley. These numbers have been quantified in the 1980 report entitled Effects of the CVP Upon the Southern Delta Water Supply Sacramento-San Joaquin River Delta, California jointly prepared by the USBR and SDWA. (SDWA)

Reply: A description of the effects of the CVP on San Joaquin River drainage problems is contained in Chapter VIII. The 1980 report referenced in the comment is included in Chapter VIII as a reference.

Comment: [page 14] The SWRCB's use of the proposed Federal Energy Regulatory Commission (FERC) Mokelumne River settlement flows as the baseline condition is inaccurate. The existing release requirement for EBMUD on the lower Mokelumne River is set pursuant to a 1961 Agreement, as amended, between EBMUD and DFG. That 1961 Agreement constitutes EBMUD's release requirement for the lower Mokelumne River pursuant to both EBMUD'S SWRCB water rights and its FERC license, and was the release requirement during the entire 1984-1994 baseline/environmental reference condition period. While the JSA flows cannot be considered as the Mokelumne River baseline, it would be appropriate to consider the JSA flows as part of the "No Project" alternative because, in the absence of SWRCB approval of this Project, FERC approval of the JSA flows could reasonably be expected to occur in the foreseeable future. (EBMUD)

Reply: The DEIR states that for parameters strongly dependent on hydrology, such as water supply, modeling of the alternatives is done at the present level of development for the period of modeled hydrology, 1922 to 1994. The same regulatory conditions are used for the no project alternative and the existing condition (D-1485 requirements in the Delta and, to the extent feasible, existing instream flow operations in the upstream tributaries). At the time of publication of the DEIR, EBMUD was operating to the FERC Mokelumne River settlement flows. In November 1998, these settlement flows were approved by FERC, and they are now enforceable requirements. Therefore, the EIR appropriately defines the settlement flows as the existing condition and the condition that would exist in the absence of the project.

Section E. DESCRIPTION OF ALTERNATIVES

Comment: The SWRCB did not consider a wide enough range of flow alternatives. The SWRCB should consider additional various alternatives. (Area1, BISF, DFG, USDOI, DWR, FWUA, SEWD, Stockton, WRAYC, YCWA)

Reply: The SWRCB is required to make an objective, good-faith effort to evaluate the environmental consequences of its actions. The "action" before the SWRCB is the adoption of a water right decision. Therefore, the scope of the EIR is limited to the evaluation of a water allocation decision limiting the season and amount of lawful diversion by riparian, pre-1914, and appropriative water right holders. The range of alternatives and their level of analysis are governed by a "rule of reason" requiring the EIR to set forth and discuss alternatives in order to select a reasoned choice. CEQA does not demand what is not realistically possible given limitations of time and funds, and the discussion of alternatives in an EIR need not be exhaustive. The EIR contains sufficient information to consider a reasonable range of alternatives so far as environmental aspects are concerned. Given the ongoing actions of other agencies and venues to address San Joaquin River basin salinity issues, consideration of additional alternatives in this process is unnecessary and would be duplicative.

Comment: [page 14] The EIR should discuss the application of the area of origin laws to the Flow and Joint POD Alternatives, particularly Flow Alternatives 3, 4, and 5, and explain any inconsistencies between the alternatives and the area of origin laws. Flow Alternatives 3, 4, and 5 are overly simplistic and should not be adopted without a more detailed analysis. The EIR and the SWRCB's action must recognize and apply the area of origin laws. As written, the DEIR violates

section 15123(b)(2) of the CEQA Guidelines because it does not summarize the proposed action and does not summarize areas of controversy such as the area of origin laws. Flow Alternatives 3, 4, and 5 are legally infeasible under CEQA because they ignore the area of origin laws and the water right priority system. (Butte Co., BWGWD, CDWA, CSJWCD, EDCWA, FWUA, GCID, RCRC, SJC, SJRG, Shasta CWA, SVRC, SEWD, Stockton, SCBLOC, TCCA, TID, TCWA, Woodland, WRAYC)

Reply: These comments address a legal issue to be decided as a result of the water right hearing, not the environmental effects of the project alternatives set forth in the DEIR. The parties in the Bay/Delta Water Right Hearing have suggested numerous conflicting interpretations for the area of origin laws set forth at Water Code sections 11460-11463, 10505, 10505.5, 11128, and 1215-1222. In a decision resulting from the hearing, the SWRCB may interpret these laws and apply them in light of the evidence received during the hearing. The EIR describes a range of alternatives that fall within the range of conflicting interpretations of these laws and analyzes the effects of implementing the alternatives. The summary in the FEIR includes the points required by section 15123(b)(2) of the CEQA Guidelines.

Regarding the comment that Flow Alternatives 3, 4, and 5 are legally infeasible under CEQA, see the response to the general comment on Flow Alternative 5 (Chapter 2, section E.1.e). Under section 15126.6 of the CEQA Guidelines, the SWRCB can include an alternative in an EIR if the alternative is potentially feasible. Further, whether or not an alternative is feasible is subject to the rule of reason. Flow Alternatives 3, 4, and 5 are potentially feasible, contribute to the range of alternatives provided in the DEIR, help foster the development of a reasoned decision, and otherwise meet the criteria for inclusion as alternatives. Accordingly, these alternatives continue as alternatives in the EIR.

Comment: [page 14] The SWRCB failed to recognize Federal Energy Regulatory Commission (FERC) flows as a part of its analysis. There is no consideration (affirmative or negative) of the improved hydrologic and environmental setting provided by the revised FERC flows on the Mokelumne and Tuolumne rivers. The SWRCB stated in the 1995 Bay/Delta Plan that it would consider these flows in its assignment of responsibility among the water right holders. (SFPUC, SJRG, TID&MID)

Reply: Licenses issued by the FERC may include instream flow requirements for environmental protection. These requirements are set independently of any action taken by the SWRCB and would occur whether or not the 1995 Bay/Delta Plan is implemented. The purpose of the EIR is to disclose the impacts of implementing the SWRCB's Bay/Delta Plan. Therefore, the DEIR appropriately does not consider the changes in the environmental setting that have occurred as a result of complying with recently imposed FERC requirements on the Mokelumne and Tuolumne Rivers. The SWRCB, however, is aware of the FERC requirements. These requirement will be considered by the SWCB in its selection of a preferred alternative.

Comment: [page 14] The EIR assumes that the New Melones Project will supply as much fresh water as is necessary to meet the Vernalis salinity objective by diluting the salinity in the San Joaquin River. The use of New Melones water in excess of 70 thousand acre-feet per year is an illegal use of water because it violates a Congressional directive; it is an unreasonable use of water that violates Article X, section 2 of the California Constitution; and it is not a beneficial use of water. The DEIR is inadequate because it does not identify and discuss salinity alternatives consistent with state law. (SJC, SEWD, Stockton,)

Reply: The current water right permits for New Melones Reservoir require the CVP to meet the Vernalis salinity objective, and the permits do not include a 70 TAF cap on the amount of water that may be required from New Melones Reservoir for this purpose. Accordingly, this assumption in the EIR is consistent with the current requirements for New Melones. The alternatives do not require that the CVP meet the salinity requirements by dilution flows from New Melones Reservoir, but rather make the assumption that this is how the CVP will comply with an obligation to meet the Vernalis salinity objective.

Whether or not the use of water in excess of 70 TAF is an unreasonable use of water is an issue for the water right hearing. Water quality control actions that can be implemented to help meet the salinity objective are described in Chapter VIII.

Comment: [page 14] The DEIR fails to adequately consider the alternatives of meeting both San Joaquin River flow and water quality requirements with water from San Luis Reservoir and/or the Delta Mendota Canal, reduction of exports and increased land fallowing. (CDWA)

Reply: Flow Alternative 6 meets the San Joaquin River flow and salinity objectives from the San Luis Reservoir and the Delta Mendota Canal. Salinity control through land retirement is discussed in Chapter VIII, section A.3.g. Considering the broad range of possible alternatives to meet objectives, the treatment of this approach is adequate.

Comment: [page 14] Riparian water users and pre-1914 appropriative water rights holders appear to be virtually unaffected by the proposed implementation methodology. They are subject to "reasonableness of use" standards if they make unreasonable use of the Bay/Delta watershed's shared resources and directly impact the collective effort to implement the 1995 Bay/Delta Plan objectives. Reasonableness of use should be incorporated as a factor in the methodology. (MWD)

Reply: An alternative in which the allocation of responsibility to meet 1995 Bay/Delta Plan objectives based solely on "reasonableness of use" is, in theory, possible. Determination of reasonable use is fact specific, and must proceed case by case. The methods of allocating responsibility analyzed in the EIR assume all uses are reasonable. If evidence submitted at the hearing shows a particular water user's diversion and use of water is unreasonable, the proportion of responsibility assigned to that party could be increased, which would reduce the responsibility assigned to other parties. Alternatively, a water right complaint can be filed against any individual water user, or group of water users, that MWD believes is not using water reasonably. The Division of Water Rights investigates all written water right complaints.

Comment: [page 15] The final EIR should ultimately address the following questions: (1) Will the implementation method be able to accommodate revised salmon objectives if they were subsequently adopted? (2) Who will be responsible for the monitoring to determine if the narrative objective for salmon is met? (3) What is a realistic time frame for achieving compliance with the narrative objective for salmon and determining adequacy of other existing water quality objectives for salmon needs? (4) VAMP as proposed is at a minimum a twelve year evaluation and(5) Will the Board consider changes sooner if new information indicates a need? (DFG)

Reply: See general comment for Chapter II, Section C, Page 1 for reply. The SWRCB will review the adequacy of the existing objectives in the triennial review process. Revised salmon objectives could be adopted as appropriate in future processes. The SWRCB will rely on data from existing

monitoring programs of CDFG, USFWS, other agencies, and the CALFED Comprehensive Monitoring Assessment and Research Program, to determine if the narrative objective for salmon has been met.

Comment: [page 15] The dismissal of the salmon narrative objective, and the incomplete consideration of the narrative Suisun Marsh objective in the Suisun Marsh Alternatives, undermines any conclusion that could be drawn from the cumulative impact assessment. Substantially more water may be required for these objectives, and without modeling all objectives, no one can know the ultimate impacts of all of the objectives and the various flow alternatives. (RCRC)

Reply: The SWRCB chose not to analyze specific implementation measures in the DEIR for the Suisun Marsh and the salmon narrative objectives. Non-flow related actions being taken by various parties to improve habitat conditions may, in combination with actions taken to implement the 1995 Bay/Delta Plan, result in achievement of the objectives. This approach is consistent with USEPA guidelines on setting biological criteria.

It is not clear at this time that some of the current salinity objectives for Suisun Marsh should be retained. The Suisun Marsh Ecological Workgroup (SEW) is studying whether compliance with the interior marsh salinity objectives will meet the narrative objective for the brackish tidal marshes and will make recommendations to the SWRCB for consideration at the next triennial review of the 1995 Bay/Delta Plan. The SWRCB has been an active participant in the SEW process. Discussions held to date indicate that implementation of the Suisun Marsh narrative objective would have no new water supply impacts.

The salmon narrative objective is difficult to assess. A period of operation under the objectives, coupled with adequate monitoring, will be needed to determine whether additional measures are needed. If further actions are needed, they would be considered in a future proceeding. Without knowing what measures might be needed, it is not possible to analyze the water supply impacts. The commentor is correct, however, that there might be a future water supply impact. A section will be added to the cumulative impact chapter of the FEIR to address this possibility. See also the general comment on narrative objectives, Chapter II, Section C.

Comment: [page 15] The final EIR should append to the end of paragraph four, which begins "Alternatives for the two narratives…" the following: "In response to SWRCB recommendation, DWR has convened the multi-agency Suisun Ecological Work Group (SEW) to address, among other tasks, the Suisun Marsh narrative standard. The SEW plans to provide its recommendation to the SWRCB in time for the next triennial review." (DWR)

Reply: Revision made to text.

Section E.1. Flow Objectives Alternatives

Comment: [page 15] We agree that the USBR should be responsible for the release of water to meet the salinity objectives at Vernalis based on the language in D-1422 and the observation that the construction of the CVP has substantially increased salinity loads and reduced flows in the San Joaquin River. No releases, however, should be made from Friant Dam. (SJRG)

Reply: Comment noted. This is a water rights issue, not a comment on environmental effects, and will be considered in the water rights hearing.

Comment: [page 15] The use of New Melones water to dilute San Joaquin River water of poor quality due to drainage is an unreasonable use of water. It is estimated that ten (10) acre feet of New Melones water is necessary to dilute one (1) acre foot of poor quality San Joaquin River water. To use this quantity of high quality water to dilute poor quality water is contrary to Article X, Section 2 of the California Constitution requiring beneficial and reasonable use of water. To place this burden upon New Melones at an estimated 10 to 1 factor is clearly unreasonable. (CSJWCD)

Reply: This comment addresses a legal issue in the water right proceeding, not an environmental effect of an alternative. The reasonableness of using high quality water to dilute poor quality water is a matter that can be raised in the water right proceeding.

Comment: [page 16] The Delta Protection Act, at Water Code sections 12200 et seq., establishes a statutory priority for in-Delta water users, and its role should be discussed in the EIR. The Delta Protection Act, having been added to the Water Code in 1959, four years after the Attorney General's Opinion regarding the area of origin laws (25 Ops. Calif.Atty.Gen. 8) changed the law regarding area of origin by adding new protections for in-Delta users. The EIR is inadequate because the Delta Protection Act was not applied in developing the alternatives. Before delivering water to export contractors, the CVP and the SWP must meet the adequate water supply needs of water users in the Delta and in the immediately adjacent areas. The revised Term 91 described in the DEIR would conflict with the Delta Protection Act. The users of water from the groundwater basin in San Joaquin County are entitled to water from the Delta in preference to the export users. (CCWD, SJC, SDWA)

Reply: The purpose of the CEQA documentation is to provide a range of alternatives for accomplishing the project purpose, to analyze the environmental effects of the alternatives, and to propose mitigation measures. This comment does not address the environmental effects of the alternatives or the adequacy of the mitigation measures, but rather raises legal issues that may be decided in the water right proceeding after consideration of the evidence and legal arguments presented by the parties. The water right proceeding is the appropriate forum for the SWRCB to decide on an allocation method to establish responsibilities for meeting the water quality objectives, and the legal arguments made in connection with the hearing will be given all due consideration in reaching a decision.

Comment: [page 16] The SWRCB's method and rationale for allocating responsibility under Flow Alternatives 3 and 4 is arbitrary. Water right holders are divided into eight priority groups and curtailed by group when there was no water available for appropriation by the most senior water right holder in the group. This results in significant outflow shortages that are assumed to be an additional SWP/CVP obligation. The water right holders should be individually curtailed. (DWR, EDCWA, MWD, SWC)

Reply: The division of water right holders into eight priority groups was done for accounting purposes in the DEIR. Priority groups are curtailed only when no water is available for the entire group to avoid unnecessary curtailment and the possibility of generating more water than is needed to meet the Delta outflow requirement.

If there were more priority groups than eight, then the average amount of additional SWP/CVP obligation would be less. In practice, the amount of water that might be generated by curtailing individual water rights can be calculated, and the number right holders needed to exactly supply the supplemental water requirement determined, thus eliminating the additional CVP/SWP obligation altogether. This approach could be incorporated into a final water right decision.

Comment: [page 16] The DEIR fails to identify: (1) how responsibility for meeting flow objectives is allocated to claimed riparian and pre-1914 appropriative rights; (2) significant effects to riparian and pre-1914 water right holders; and (3) the SWRCB's authority to curtail diversions under riparian and pre-1914 appropriative water rights. Therefore, the DEIR does not provide an adequate environmental analysis for a subsequent SWRCB action resulting in the curtailment of riparian and pre-1914 appropriative rights. If the SWRCB intends to curtail diversions under riparian and pre-1914 appropriative rights, the DEIR must be amended and recirculated. (BSWA, Butte Co., Calaveras Co. WD, EDCWA, GCID, PCWA, Sac, SFPUC, SJRG, SJWD, SVRC, W. Sac, YCFC&WCD)

Reply: The alternatives in the DEIR, as currently proposed, do not adversely affect claimed riparian or pre-1914 appropriative water rights. Flow alternatives 1, 2, and 6 assign responsibility for meeting the flow objectives in the 1995 Bay/Delta Plan solely to the DWR and the USBR and have no impact on other water right holders.

Flow Alternatives 3 and 4, as configured in the DEIR, have no impact on riparian or pre-1914 water rights because the SWRCB has not proposed to modify these rights. Figure V-30 shows that in very dry years (less than five percent of years) there is insufficient flow available to support diversions by all riparian and pre-1914 water right holders. During those years, the DWR and the USBR would assume responsibility for releasing from storage sufficient water to meet the needs of those riparian and pre-1914 water right holders who have contracted for water with the DWR and/or USBR. These parties are identified as Group 9 in the DEIR. There are occasions under current procedures when the SWRCB notifies riparian and/or pre-1914 water right holders that there is no water available for appropriation, This is referred to as the "dry year program." This program would continue, but is unaffected by Alternatives 3 and 4.

Alternative 5 affects pre-1914 water right holders shown on Table II-8 of the EIR. Under Alternative 5, those water right holders with rim reservoirs with a capacity greater than 100 TAF which are used primarily for consumptive purposes would be affected. The impacts to some of these holders are shown on Table V-3. Although the SWRCB would, under Alternative 5, require releases of water from the Hetch-Hetchy complex, comparison of the required flows shown on Table II-7 of the EIR to the flows currently released indicates that the required flows would almost always be met under current conditions and there is no significant impact on the City and County of San Francisco. This was confirmed in a letter dated January 9, 1998 to Thomas Berliner, General Counsel to the City and County of San Francisco, from Barbara J. Leidigh, Senior Staff Counsel to the SWRCB.

Alternatives 7 and 8 would affect only those riparian and pre-1914 water right holders who are parties to the negotiated agreements. The DWR and the USBR testified during the water right hearing that they would "backstop" the San Joaquin River Agreement proposed under Alternative 8. Therefore, Alternative 8 could be implemented without affecting other pre-1914 water right holders. Alternative 7 is no longer being supported by the parties who proposed it. As modeled, however, the DWR and USBR would be required to release any necessary flows over those provided by the other parties, and non-agreeing riparian and pre-1914 water right holders would not be affected.

Alternatives 3, 4 and 5 could be extended to water right holders not identified in the DEIR, including riparian and pre-1914 water rights holders, but the SWRCB has not determined the environmental impacts of doing so. Prior to taking such an action, the SWRCB would prepare and circulate a supplemental environmental document.

The SWRCB's authority to curtail diversions under riparian and pre-1914 appropriative water rights is discussed on page I-3 of the DEIR.

Comment: [page 16] Some of the alternatives in the DEIR appear to place demands on New Melones Reservoir for the purpose of meeting water quality and flow objectives in the South Delta which would impair the USBR's ability to supply water under existing contracts, or make it difficult to obtain new contracts to purchase water out of New Melones for future needs. (SJRG, TUD)

Reply: While the alternatives mentioned assume, for purposes of analyzing the environmental effects, that the CVP will meet its flow obligations from New Melones Reservoir, the alternatives do not require this. The CVP could choose to meet any flow obligation it is assigned by using other means. The issue of whether the CVP has particular obligations under the area of origin statutes or under an agreement, in connection with New Melones Reservoir does not address the environmental effects of the alternatives, and will be considered in the water right proceeding. The CVP's legal obligations are a matter for determination in the water right proceeding.

Comment: [page 16] The DFG recently participated in an inventory of the number and location of river diversions in the lower San Joaquin basin. A map is included (Attachment A) for the SWRCB's reference. The cumulative total diversions in this area can exceed 5,000 cfs. Most of those diversions are small and although individually they have little capability to provide flows to meet flow objectives they collectively may influence flows that are released to meet those objectives. Each flow alternative should take this information into account. The FEIR should disclose how this issue will be addressed in the preferred alternative. (DFG)

Reply: Comment noted. The alternatives considered in the DEIR do not consider the impacts of small diverters. These water users could be included in a future proceeding.

Comment: [page 16] Aspects of the SJRA that require further environmental analysis in the DEIR include: The SJRA requirement that 350,000 to 450,000 hatchery reared salmon be released on an annual basis. Although the source of these salmon is still being resolved, the use of both out-of-basin and in-basin hatchery reared salmon has potentially significant deleterious impacts on natural salmon population that must be assessed to properly evaluate the merits of the SJRA. (EDF-2)

Reply: The SWRCB's action will be limited to implementation of the water quality objectives. The selection of salmon stocks to be used for experimental purposes is outside the jurisdiction of the SWRCB and is not addressed in the FEIR.

Comment: [page 16] The EIR should study the effects of other potential agreements, such as the proposed Yuba River agreement, on the environment prior to approving them. (NHI)

Reply: The Yuba River agreement is not analyzed in the DEIR, nor is it presently before the SWRCB for consideration. The SWRCB commented on the Initial Study/Draft Negative Declaration circulated by the Yuba County Water Agency.

Comment: [page 16] In presenting seven Flow Alternatives with no preferred alternative, or even a semblance of formulating a conclusion from these alternatives, the DEIR is somewhat confusing. It tends to lack a serious direction and leaves water users pitted against fellow water users within the state. (OUWUA-1)

Reply: Comment noted. CEQA does not require that a preferred alternative be identified.

Comment: [page 16] The alternatives that attribute responsibility to all tributaries for Delta outflows, regardless of their Project involvement, are based on average monthly unimpaired flow. This assumes a critical volume during every month and is inconsistent with the SWRCB's statement that the seasonal pattern of outflow primarily influences estuarine-dependant organisms rather than the volume of outflow. This also may impact Area of Origin uses to compensate for mitigation which is SWP and CVP project responsibility according to their original documents. (VWPA)

Reply: The flow objectives were established to mimic seasonal patterns of outflow that occurred under unimpaired conditions. The SWRCB's statement refers to that. Obviously, these flow patterns can only be maintained through the provision of an adequate volume of water. For more information, please see the response to other comments on Chapter II.

Comment: [page 16] Once riparian habitat has been reestablished upstream, will the flow requirements be moderated to more accurately reflect historical hydrologic patterns? (VWPA)

Reply: Variability is incorporated into the Bay/Delta Plan flow objectives. The objectives may be changed in the future to account for any change in the physical environment in the Delta.

Comment: [page 16] The SWRCB should protect upstream watersheds as required by the Water Code. Restricting diversions could impact wildlife refuges. (TCCA)

Reply: Comment noted. Effects of the flow and Joint POD alternatives on ecosystems in upstream areas are described in Chapters VI and XIII, respectively. See the comment on wildlife refuges, Chapter 6, section C.3, page 57.

Comment: [page 16] The alternative or combination of alternatives that the SWRCB adopts to implement the 1995 Bay/Delta Plan should preserve and protect the prior right entitlement that Tuolumne Utility District has to purchase water from New Melones Reservoir. No alternative should be adopted that will interfere with or prevent the USBR from entering into a consumptive use contract with Tuolumne Utility District for the comparatively small amount of water it will need from New Melones Reservoir. (CFWID)

Reply: Comment noted.

Comment: [page 16] The alternatives in the DEIR are too narrow. They should also address waste and unreasonable use by entities diverting water from the Delta. (EBMUD)

Reply: The flow alternatives in the DEIR set up specific "rules" for each of the potential methods of allocating responsibility. These rules are then followed to their logical conclusion to determine the environmental effects of allocation under each particular method. The EIR assumes that all water use by parties is reasonable. Determinations regarding waste and unreasonable use require an exercise of discretion by the SWRCB. The SWRCB will consider any evidence regarding reasonableness factors introduced at the hearing in its decision and may modify a particular party's obligation accordingly. Any determination regarding reasonableness either will fall within the range of alternatives presented in the DEIR or will be analyzed in the FEIR, as appropriate.

Comment: [page 16] The implementation of Flow Alternatives 3, 4, and 5 is inconsistent with the allocation of shortages under the water rights settlement contracts between many upstream diverters and the USBR. Flow Alternatives 3 and 4 propose to substitute a modified Term 91 approach for the enforceable contractual obligations of the USBR under the water rights settlement contracts. These variable Term 91 shortages under Alternatives 3 and 4 (ranging up to 90% or more during key irrigation months in the Sacramento Valley), would, at times, greatly exceed the fixed shortfalls (25% maximum based on the Sacramento River index, for instance) established under water rights settlement contracts. Similarly, Alternative 5 would substitute a requirement to provide a pro rata share of unimpaired inflow from each major Central Valley tributary. This could, in many cases, greatly exceed the fixed shortfalls established under water rights settlement contracts. Each of these alternatives would completely undermine the reliability that the contract shortage provisions provide for water rights settlement contractors and project operators, and so disregard the settlements that were reached with the various senior diverters in the course of the construction of the State and federal export projects. Such alternatives are legally infeasible and, as discussed below, may well have significant impacts on the environment. (SVWU)

Reply: Flow Alternatives 3, 4, and 5 do not replace the enforceable contractual obligations of the USBR under the water right settlement contracts. Diversion curtailments under Alternatives 3 and 4, and reservoir releases under Alternative 5 are not a replacement for the deficiencies imposed on deliveries to settlement contractors by the USBR. Any terms and conditions imposed by the SWRCB on water right holders to implement the flow objectives are separate and unrelated to contract conditions between the USBR and the settlement contractors. Regarding the environmental impacts of the flow alternatives, these impacts are disclosed in the DEIR.

Comment: [page 16] Some of the Flow Alternatives described in the DEIR would make more water available for export by the CVP and SWP by requiring in-basin users to cease diverting or release water to meet the requirements of the Plan. It is uncertain whether any of these alternatives can be implemented without violating the priority doctrine, California's area of origin protections, and the domestic and municipal use preferences. However, assuming solely for the sake of argument that one of these alternatives currently could be implemented without violating these protections, the DEIR fails to explain how the SWRCB will prevent such violations from occurring in the future if the CVP or SWP, as a result of future increased demands for exported water, are unwilling or unable to make water available to meet the future increased water supply needs of in-basin users with a higher priority. This potential for future in-basin shortages should be addressed in the DEIR, unless the SWRCB is willing to require that water users who export water demonstrate how they will meet their Bay/Delta flow requirements and water supply needs, both temporarily and permanently, when water

which currently may be available for these purposes is required for in-basin use -- through specified future alternative sources of water or other measures. (Sac)

Reply: The DEIR describes and analyzes a range of alternatives for meeting the objectives in the 1995 Bay/Delta Plan. Before any alternative or combination of alternatives is adopted, the SWRCB will consider the evidence and legal argument received in the water right hearing and will tailor its decision to comply with applicable laws. The appropriate forum for addressing the legality of the alternatives is the water right hearing. The alternatives are potentially feasible, pursuant to California Code of Regulations, title 14, section 15126.6(a). CEQA does not require the SWRCB to speculate about its future response to possible violations of the watershed protection statutes. Presently, any party can apply for and receive a water right permit for inbasin uses with senior priority to the SWP and CVP export permits.

Comment: [page 16] The SWRCB should not dedicate water to the environment if the action impacts existing water rights. (Burick)

Reply: Comment noted. Implementation of the 1995 Bay/Delta Plan flow objectives requires the SWRCB to exercise its water right authority.

Comment: [page 16] The system of exchange agreements and transfers now used to benefit agriculture can also be used to help meet Vernalis flow objectives in many year types. The scope of Flow Alternatives 3, 4, 6 and 7 should include analyses which evaluate such options. (DFG)

Reply: The Letter of Intent (Alternative 7), and the VAMP (Alternative 8), are essentially long term water transfers for the purpose of helping to meet the Vernalis flow objectives. Therefore, this comment has been addressed within the existing alternatives.

Comment: [page 16] DFG suggests the recirculation concept in Alternative 6 be examined further to determine if benefits can be achieved through some level of water recirculation in conjunction with the primary elements of Alternative 5, especially in dry and critically dry years. (DFG)

Reply: Comment noted. The flow alternatives were formulated during the scoping process for the EIR. The alternatives were designed to represent a range of water management options for meeting the water quality objectives in the Delta. The alternative adopted will be within the range of the alternatives described in the EIR.

Comment: [page 16] The DFG believes that a preferred alternative should include the following components and modeling assumptions:

1. Alternative 5 could form the foundation for a preferred alternative, with modifications so that the flow objectives are achieved while taking into account how users dependent on Friant will share obligations to meet Vernalis flow objectives and assuring adverse impacts on carry over storage are balanced among the San Joaquin and Sacramento basin reservoirs to avoid extreme impacts at any reservoir.

2. Use of the Newman Wasteway should be considered to help meet the South Delta Water Agency's consumptive use requirements listed in Table II-9 on Page II-34 of the DEIR. This feature should be

used only between June 15 and September 15, and in December and January of each year. Use of the Newman Wasteway or other features of the CVP and SWP may be necessary in drier years to equitably distribute responsibility for Vernalis flow objectives in innovative ways. Any flows provided to the San Joaquin from the Newman Wasteway would not be included as Delta inflow for the purposes of calculating allowable exports from the SWP or CVP.

3. Part of Alternative 4 could be included as it relates to how the water is delivered to contractors of the Friant Project. Those water supplies could be handled in the following way:

> During wet and above normal water years, flow requirements would be set for the San Joaquin River below Friant as part of that project's responsibility to meet Vernalis flows and contribute to meeting the Delta outflow objectives. Class 1 water delivered to areas 1 through 3 (Figure VI-33, page VI-132) would be treated as in-basin water deliveries (approx. 800 TAF, Table VI-79, Page VI-134). For those deliveries, the Friant Project would not be required to provide flows in the San Joaquin River to meet its share of flows to meet the Vernalis flow objectives. Class 1 water delivered to areas 4 through 6 would require the Friant Project to contractually provide flows from New Melones or other reservoir on the San Joaquin system to meet its share of flows to meet the Vernalis flow objectives. Class 2 water delivered to areas 1 through 3 would be treated as in-basin water deliveries but would require the Friant Project to contractually provide flows from New Melones or other reservoir on the San Joaquin system to meet its share of flows to meet the Vernalis flow objectives. Class 2 water delivered to areas 4 through 6 during Wet and Above Normal Water Years would require the Friant Project to provide flows in the San Joaquin River to meet its share of flows to meet the Vernalis flow and Delta Outflow objectives.

4. Allocation of responsibility to meet the Vernalis flow objective should recognize and include contributions from each eastside tributary supporting anadromous fish.

5. The CVP would retain its responsibility for meeting the Vernalis flow objectives with flows as needed released from New Melones or other reservoir on the San Joaquin.

6. Limits on exports at the SWP and CVP would be in place to avoid increased exports beyond those modeled for Alternative 2 in the February through June period.

7. Increases in exports in November, December, and January when juvenile or yearling salmon are present would be reduced to maintain positive QWEST values or reduce the extent of increasing already negative QWEST flows.

8. Mokelumne River flow requirements would be at levels described in the 1997 settlement agreement between DFG, EBMUD, and USFWS. (DFG)

Reply: Comment noted. The components of DFG's preferred alternative is bracketed by the various alternatives in the FEIR. Parties should present evidence in support of their preferred alternatives in the water right hearing.

Comment: [page 16] Absent the inclusion of a "Term 91-like" term in all water transfers or a dedication of the water pursuant to Water Code Section 1707, it is likely that river diverters (riparian, illegal, and appropriative) will divert transfered water. This is a concern in the San Joaquin River Basin in all but the wet years because generally only the legally required minimum flows are released to the natural channels and accretions/depletions are important components of in-stream flows. (DFG)

Reply: Comment noted. This comment would only apply to negotiated alternatives. Parties who voluntarily transfer water to meet Bay/Delta objectives can file petitions pursuant to Water Code section 1707.

Comment: [page 16] Bulletin 160-98 demonstrates looming water shortages for our region. To put it simply, we cannot afford an additional barrier to our ability to meet the future water supply needs of our region, which is what Alternatives 3, 4 and 5 would accomplish. (MCWRA)

Reply: This is not a comment on the environmental effects of the proposed project. CEQA does not require analyses of growth-limiting effects. The appropriate forum for raising this issue is the water rights hearing.

Comment: [page 16] If transfers are a component of the preferred alternative, DFG recommends that a monitoring and evaluation program be in place to assess the fishery effects of the transfer water both in the tributaries of origin and in the Delta to confirm the beneficial effects of transfers to protect public trust resources.

Any alternative that relies on water transfers as a mechanism to implement the 1995 Bay/Delta Plan will require some form of monitoring. Two reference flow measurement sites could be established as part of the alternative, the first near the release point to document the release of water in excess of minimum requirements and natural flows and the second downstream of the majority of the diversions and near the compliance point. (DFG)

Reply: Transfers are not a component of the flow alternatives. If transfers are used, they will be subject to CEQA review. Monitoring and evaluation plans can be recommended at that time. The SWRCB could consider monitoring as a condition of approval of water transfers over which it has authority.

Comment: [page 16] The Department of Water Resources recommends the following:

1. For the flow objective alternatives, a preferred alternative is not recommended at this time.

2. For the Suisun Marsh, we recommend Alternative 5 with indicated modifications that update the description of the alternative. We clarify that the actions proposed in the Suisun Marsh Preservation Agreement Amendment III do not include Green Valley Creek flow augmentation nor redirection of Morrow Island drainage to Suisun Bay.

3. For the Salinity Control Alternatives in the San Joaquin Basin (Vernalis), we recommend a negotiated settlement.

4. For the southern Delta (excluding Vernalis), we recommend Alternative 3, which is an implementation of the South Delta flow control structure of the ISDP program.

5. For the dissolved oxygen objective, we recommend a combination of Alternative 3, ISDP program, and Alternative 4, discharge improvements from the Stockton treatment plant. We believe it is significant to note that the ISDP program may serve as the preferred alternative for two components of the program. (DWR)

Reply: Comment noted.

Comment: [page 16] The SWC strongly supports the VAMP. (SWC)

Reply: Comment noted.

Comment: [page 16] Although the SWC do not have a preferred flow alternative, it does not support Flow Alternatives 2, 6, or 7. (SWC)

Reply: Comment noted.

Comment: [page 16] In its introduction of the seven Bay/Delta flow alternatives, the DEIR describes the relevant flow objectives as including "flow objectives on the Sacramento River at Rio Vista." (DEIR, at p. II-16.) However, this description appears to be inconsistent with the statement at page VI-2 of the DEIR that "Freeport is the measuring site for Delta inflow from the Sacramento River" If there is an analytical distinction between these two measurement points, then the DEIR should be edited to explain the distinction. Otherwise, the DEIR should be edited to make the references consistent, and to correct any other incorrect references to the flow objectives. (YCFC&WCD-2)

Reply: There is a distinction between the two measuring points. Rio Vista is a compliance monitoring point within the Delta for meeting the 1995 Bay/Delta Plan flow objectives (see Table II-3). Freeport is a flow measurement station on the Sacramento River used for determining inflow from the Sacramento River to the Delta (see Figure II-3). Freeport is the appropriate point to analyze the impacts of the various flow alternatives because it represents one of the upstream boundaries to the Delta. This distinction appears to be clear as presented in the text.

Section E.1.a. Flow Alternative 1 (No Project)

Comment: [page 16] As written, the last sentence of the second paragraph could incorrectly be taken to suggest that the SWP and CVP are responsible for meeting the D-1422 objectives. We suggest the meaning be clarified by adding at the "...and the CVP is solely responsible for meeting the objectives required by D1422." (DWR)

Reply: Revision made to text.

Section E.1.b. Flow Alternative 2

Comment: [page 016] Flow Alternative 2 may not be feasible because New Melones Reservoir cannot meet the entire flow objective at Vernalis due to current water right entitlements and priorities. (DFG)

Reply: It is unclear to which water right entitlements and priorities the comment is referring. However, analysis presented in the DEIR indicates that the flow in the Stanislaus River and the size of New Melones Reservoir are insufficient to meet both inbasin needs and the Vernalis flow and salinity objectives under Alternative 2. The reservoir on several occasions reaches minimum pool

and salinity objectives are not met. This does not mean that the alternative is infeasible, but it does mean that a water right decision based on this alternative should recognize that the objectives will not always be met from New Melones Reservoir.

Comment: [page 16] Alternative 2 would implement the Bay/Delta water quality objectives in a manner that is consistent with the "area of origin" laws. These laws were intended as assurances to watershed areas that only water surplus to the needs of their inhabitants and ecosystems would be appropriated by the CVP and SWP for export to the service areas south of the Delta. It's time to honor that intent by the selection of Alternative 2. (MCWRA)

Reply: Comment noted. This is an issue for the water rights hearing, not a comment on the environmental effects of the project.

Comment: [page 16] Flow Alternative 2 is the only alternative that meets the 1995 Bay/Delta Plan water quality objectives in a manner that preserves California water rights as they have existed successfully under California law for nearly a century. As such, it is the alternative the TCWA supports. The TCWA does not support Flow Alternatives 3, 4 or 5 as they directly or indirectly deprive in-basin water users of their water rights priorities as defined in the Water Code, Section 11460. (TCWA)

Reply: Comment noted.

Comment: [page 16] The description of Flow Alternative 2 should include the discussion of Term 91. Even under the assumption that the SWP and CVP will be solely responsible for meeting the 1995 Bay/Delta Plan flow objectives, other water right holders should be required to cease diversions when storage releases from the CVP and SWP exceed exports plus carriage water. The rationale for extension of Term 91 to appropriators with priority dates senior to the SWP and CVP is as applicable to Flow Alternative 2 as it is to Flow Alternative 3. (WWD)

Reply: Term 91 would continue to apply to a limited number of water right holders if a Flow Alternative 2 approach were adopted by the SWRCB. Term 91 does not apply to all post-1914 water rights, and cannot be extended to other water right holders without providing an opportunity for a hearing and amending the calculation to account for water right holders who are senior to the projects. The necessary modification results in Flow Alternative 3.

Comment: [page 16] Flow Alternative 2 anticipates SWP and CVP meeting all of the objectives with the Vernalis flow objectives being met from releases from New Melones Reservoir. It would appear to be contrary to area of origin and watershed protection law to direct or allow the USBR to meet downstream fishery mitigation flows with fresh water that is needed in the areas of origin, or surrounding areas that can be conveniently served therefrom. In addition, it does not appear to make sense to have an alternative that is physically impossible. SDWA believes that all interests who have examined and modeled the issue acknowledge that the yield of New Melones is insufficient to meet the flow objectives as well as the water quality objective at Vernalis. If New Melones cannot provide all the flows, it makes no sense to have that as an alternative. (SDWA)

Reply: Flow Alternative 2 is a feasible alternative. The projects are presently operating in a manner similar to Flow Alternative 2. Vernalis objectives will not always be met under Flow Alternative 2

and the EIR documents this. Area of origin protections apply to the relative priorities between inbasin users and exporters. The protections do not apply against instream releases for public trust purposes.

Section E.1.c. Flow Alternative 3

Comment: [page 16] The EIR should contain a more detailed explanation of the assumptions in Flow Alternatives 3 and 4 relating to the "inbasin/export" nature of Friant Kern Canal deliveries. If Friant Kern Canal deliveries are considered an inbasin use of water, water rights in the Tulare basin should be assigned an obligation to the Delta. (BSWA, DWR, DFG, Shasta CWA, SVRC, WWD, EDF)

Reply: As the DEIR explains, Flow Alternatives 3 and 4 are identical except for the manner in which Friant Kern Canal (FKC) deliveries are treated. Under Alternative 3, FKC deliveries are considered to be inbasin, and water served to the Exchange Contractors is treated as an export from the Delta. In Alternative 4, about 12 percent of the FKC deliveries are considered to be inbasin, because they are made to contractors in the adjacent Kings River watershed which can be conveniently served from the canal; the balance of FKC deliveries are treated as exports. The Exchange Contractors diverted water from the San Joaquin River under pre-1914 appropriative rights prior to construction of the Friant project. Their underlying inbasin rights to the San Joaquin River were retained by the individual districts when the exchange contracts were executed. Therefore, FKC net exports under Alternative 4 are equal to FKC exports minus Exchange Contractor deliveries or entitlements, whichever is less.

Whether FKC deliveries are viewed as an inbasin or an export use of water depends on the nature of the hydrologic relationship between the Tulare basin and the San Joaquin Valley as a whole. Under present conditions, except in very wet years, rivers tributary to the Tulare basin terminate on the valley floor in lakes or sinks. Under natural conditions this was also the case, though to a lesser extent. This partial linkage is recognized in Alternative 3; however, water right holders in the Tulare basin were not assigned a Delta obligation because under dry conditions their diversions do not cause a reduction in Delta inflow. Alternative 4 takes the opposite view. As the Tulare basin is normally isolated from the San Joaquin Valley, FKC diversions into the Tulare basin cannot contribute to Delta inflow and are therefore an export. Alternatives 3 and 4 were designed to show the relative difference between these opposing views; a detailed description of the calculation methodology is found in Chapter IV. The net result may be seen by comparing tables on page A3-05 and A3-13 of Volume 2, the Technical Appendix. When the Friant project is considered an export project, the average annual amount of supplemental water to be allocated among water right holders is 110 thousand acre-feet greater than when Friant has inbasin status.

Comment: [page 16] The FEIR should explain how the SWRCB intends to allocate a fair burden of responsibility to the parties whose water rights permit's face value is less than 5,000 acre-feet per year. (CFWID, USDOI, MWD, SVWU, BWGWD)

Reply: The December 2, 1997, Notice of Public Hearing and the May 6, 1998, Revised Notice of Public Hearing both contain Enclosure 2A. This enclosure lists the water rights potentially subject to the flow alternatives described in the DEIR and is essentially the same as DEIR Table II-5. Though the current proceeding is limited to water right holders with a cumulative face value of greater than 5,000 acre-feet per year, the SWRCB could in a future proceeding require water right holders whose cumulative diversions are less than the threshold to share responsibility for meeting Bay/Delta flow objectives.

The method utilized for allocating responsibility under Flow Alternatives 3 and 4 could be extended to these other water right holders. Preliminary studies indicate that these other water right holders are capable of delivering approximately 5 percent of the water diverted from the Bay/Delta watershed. Before the SWRCB initiated proceedings to allocate responsibility to these water right holders, it would prepare any necessary environmental documentation.

Comment: [page 16] The DEIR does not adequately take into account that many water rights are dual-purpose (consumptive and hydroelectric) and therefore subject to FERC jurisdiction. Curtailment of those diverters is a matter of federal jurisdiction and would in many cases violate their FERC licenses. Yet there is no analysis in the DEIR of the scope of the FERC jurisdiction, the potential conflict with the state in attempted jurisdiction, or the feasibility of the state's proposed order on the FERC-licensed projects. (BWGWD, SFPUC)

Reply: The EIR does not set forth any alternatives that would assign responsibility for meeting the 1995 Bay/Delta Plan flow objectives to water right holders with power as a primary permitted purpose of use. Table II-5 in the DEIR includes only water rights with consumptive uses.

With regard to FERC jurisdiction; this comment addresses an unsettled legal issue that is beyond the scope of this EIR. This issue may be considered in the water right hearing in Phase 8 and in selection of a preferred alternative after the hearing.

Comment: [page 16] Pre-1914 appropriators cannot be considered until all post-1914 appropriations have been curtailed. The EIR does not address the potential impacts to small post-1914 appropriators; therefore, implementation of the objectives cannot include small post 1914 appropriators until they are given notice and further environmental documentation occurs. (SFPUC, SJRG)

Reply: The implementation of water quality objectives for the Bay/Delta estuary is an incremental and iterative process. Table II-5 of the DEIR, and Enclosure 2(a) of the Bay/Delta Hearing Notice, included only post-1914 water right holders with a cumulative face value of greater than 5,000 acre-feet. The SWRCB could include riparian water rights, pre-1914 water rights, or small post-1914 rights that currently fall below the size threshold in a future proceeding.

Comment: [page 16] Under Flow Alternatives 3 and 4, who is responsible for meeting the objectives after all affected diversions have been curtailed? (NHI)

Reply: An underlying assumption in the Term 91 method is that the SWP and the CVP would retain overall responsibility for Delta compliance.

Comment: [page 16] Flow Alternative 3 follows water right priorities, with the Friant Project considered in-basin. Even if considered an in-basin use, the Friant Project must contribute to the solution. The Vernalis flow requirements in the 1995 Bay/Delta Plan are designed to overcome the harm to the fisheries that have resulted from the present operation of the San Joaquin River System. Friant's major diversion of flows from the San Joaquin River is a major cause of the harm to the fisheries. Moreover, under the public trust doctrine and California Fish and Game Code section 5937, the Friant project must be required to release water at Friant Dam to keep fish downstream in good condition. The water so released would contribute to meeting the Plan flow requirements. Only

Alternative 5 (watershed approach) requires the release of any water from Friant Dam. The Board should add an alternative based on the water rights system but incorporating Fish and Game Code Section 5937 required releases from Friant Dam. (Stockton)

Reply: The purpose of the proposed project is to implement the 1995 Plan objectives, not to set or implement instream flow requirements on the tributaries. In regard to the USBR's obligation to Delta flow requirements, the USBR could provide water from four sources: (1) New Melones Reservoir, (2) Millerton Lake, (3) the Delta Mendota Canal and (4) water purchased from other parties. The EIR analyzes the impact of acquiring water from each of these alternative sources. The SWRCB could select an alternative that is a hybrid of those analyzed in the EIR, which would conform with the alternative proposed by this comment. The impacts of such an alternative are within the range of impacts disclosed in the EIR.

Comment: [page 16] Water bypassed by the HSVID in the Pit River under Flow Alternatives 3, 4 or 5 must pass through Big Valley before entering the Sacramento River and reaching the Bay/Delta Estuary. Water users in Big Valley divert substantial quantities of water from the Pit River under individual riparian rights. These rights would not be affected by the curtailments under Flow Alternatives 3, 4 and 5. Historically, no water flows in the Pit River past Big Valley during dry months, as a result of diversions by Big Valley's riparian water users. Because Flow Alternatives 3, 4 and 5 only would require curtailments of the HSVID's water rights during particularly dry months in the HSVID's storage season, any water bypassed by the HSVID during those months would be diverted for riparian use by Big Valley water users.

The EIR's analyses of the impacts of Flow Alternatives 3, 4 and 5 do not consider the effects of storage and diversion by intervening users on Bay/Delta flows that would be created by curtailment of upstream water rights. An analysis of these effects demonstrates that curtailment of the HSVID's water rights ultimately would not create any increased flows to the Bay/Delta Estuary.

The DEIR does not consider such effects of intervening diversions and use on Bay/Delta flows that would be created by curtailments of upstream water rights under Flow Alternatives 3, 4 and 5. The SWRCB should recirculate an amended DEIR that specifically analyzes this issue, and based upon that analysis, the DEIR should conclude that water rights like the HSVID's should not be curtailed under Flow Alternatives 3, 4 or 5 because such curtailments would not provide any additional flows to the Bay/Delta.

The DEIR's environmental impact analysis fails to consider all the significant impacts of Flow Alternatives 3 and 4 in this area and others like it. (HSVID)

Reply: The water rights of HSVID do not permit direct diversion, and diversion to storage must cease no later than April 30. With few exceptions, water right curtailments under the flow alternatives would be required during the May to August period. Thus, Flow Alternatives 3, 4 and 5 will have little impact on HSVID's water rights. In the analysis of these alternatives, no additional inflow to the Delta was assumed to have come from these rights.

Comment: [page 16] What happens when New Melones is unable to provide both its share and the Friant share under Flow Alternatives 3 and 4? (SJRG)

Reply: The modeling for Flow Alternatives 3 and 4 indicate that New Melones is always able to meet its own obligations as well as those of Friant. Notwithstanding the model results, if the USBR

cannot obtain adequate water from New Melones Reservoir, it will have to find additional supplies from some other source.

Comment: [page 16] The DEIR erroneously assumes that "Previously Stored Water" is water to which the SWP and CVP has a clear right. (CDWA)

Reply: This comment does not address the environmental effects of the project. The appropriate forum in which to address water right issues is the water right hearing.

Comment: [page 16] Alternative 3 requires that flows be met on a water right priority basis. SDWA agrees that this is the correct method by which responsibility should be allocated after the projects or other parties have been assigned responsibility to mitigate the effects they caused.

In addition, once that is done, other diverters should not be required to forego the use of water unless and until they are given an opportunity to contract for a supplemental supply from the projects, in accordance with area of origin and watershed protection statutes. (SDWA)

Reply: Comment noted.

Comment: [page 16] The DEIR completely ignores the FERC order approving the storage allocation set forth in the Fourth Agreement between the districts and the City and County of San Francisco. The Districts are entitled, within the limits of their FERC license, to release for project purposes water which San Francisco chooses to store in the Don Pedro Reservoir, but the Districts have no control over the time or the season when San Francisco may elect to store water in its Don Pedro water storage bank in the reservoir. Implementation of the 1995 Bay/Delta Plan as proposed in the DEIR would impose a burden on the Districts which is inconsistent with a decision of the FERC.

The DEIR assumes that incremental increases in storage in New Don Pedro are the result of natural inflow less evaporation and releases for instream needs, power, and irrigation demands, without acknowledging that some of the inflow into New Don Pedro is water released by San Francisco pursuant to the Raker Act and the Fourth Agreement.

The SWRCB's analysis of Alternatives 3 and 4 also fails to recognize and evaluate the potential water supply and economic impacts to San Francisco and its customers as a result of implementing Alternatives 3 and 4. According to the DEIR, water needed for Bay/Delta and other public trust uses would have to be bypassed during certain times of the year. Since water needed for public trust purposes is not available for appropriation, San Francisco's share of the water that has to be bypassed through New Don Pedro storage would not be credited to its water bank. As a result, San Francisco would have to release additional water in order to credit its New Don Pedro water bank account. (TID&MID)

Reply: This comment presupposes that under Alternatives 3 and 4 all inflow to Don Pedro reservoir must be bypassed to meet Delta obligations when Term 91 is invoked. SFPUC's water rights are considered to be pre-1914 and are not included in EIR Table II-5. We recognize that there is a contractual relationship between TID&MID and SFPUC which requires under certain conditions releases of stored water from upstream reservoirs, and restorage in Don Pedro. Alternatives 3 and 4 will have no effect on this agreement, as the alternatives require only the bypass of natural inflow.

Comment: [page 16] Flow Alternative 3 is described by 10 paragraphs on pages II-16 through II-18, compared to the two sentences used to describe Flow Alternative 2. However, it is impossible to discern from the description of Flow Alternative 3, how it differs from Flow Alternative 2, unless Flow Alternative 2 does not include Term 91. If this is the distinction, Flow Alternative 2 is inconsistent with the law and should not be included in the analysis of alternatives. With respect to Flow Alternative 6, it is impossible to tell from its scant description, how or for what purpose the alternative will be implemented. (WWD-2)

Reply: Flow Alternative 2 includes Term 91. The fundamental difference between Flow Alternative 2 and Flow Alternative 3 is that under Flow Alternative 3, all post-1914 appropriative water right holders have responsibility to curtail diversions to meet Delta objectives when the SWP and the CVP are releasing supplemental water to satisfy inbasin entitlements. Under Flow Alternative 2, only existing Term 91 permittees and licensees must curtail diversion when supplemental water is being released.

Flow Alternative 6 is similar to Flow Alternative 2 in that the responsibility for meeting the 1995 Bay/Delta Plan flows objectives is solely with the SWP and the CVP. However, under Alternative 6, the CVP meets the Vernalis flow objectives by releasing Delta-Mendota Canal water through the Newman Wasteway into the San Joaquin River. Under Alternative 2, the Vernalis Objectives are met principally by releases from New Melones Reservoir.

Comment: [page 16] The question has been raised about whether there will be an impact on the duration of the modified Term 91 period because reservoirs must refill to replace water assumed to be provided to meet in-basin obligations. It appears that this refill factor would not affect the modified Term 91 period, but could well change the amount of time that the Delta would be considered to be in balanced conditions. (SFPUC)

Reply: The "refill factor" does not change the period during which Term 91 is in effect. It may affect the period during which the Delta is in balanced conditions.

Comment: [page 16] The Sacramento Municipal Utility District (SMUD) operates its Upper American River Project (UARP) solely for the production of hydroelectric power, and the City of Sacramento has no control over SMUD's UARP diversion and release schedules. The water rights for Applications 12622 and 12321 were assigned to Sacramento in 1957. Under these permits, Sacramento rediverts for municipal and recreational uses water previously diverted and released by SMUD. Sacramento assumes that, although these two permits are listed in priority group 2 in Table II-5, the City would not be directed to cease its rediversions for consumptive use under Flow Alternative 3 and 4. (Sac)

Reply: The City of Sacramento is partly correct in its assumption. The water rights held by SMUD are not considered in the analysis of Alternatives 3 and 4. The water rights held by Sacramento for consumptive uses have direct diversion and storage seasons of November 1 to August 1. If Sacramento's rights were curtailed in June or July, Sacramento would have to bypass natural flow. If the upstream reservoirs were releasing water from storage, regardless of whether they were being operated for consumptive or power purposes, then those storage releases could be rediverted at Sacramento's American River treatment plant (assuming that the downstream intake is an authorized point of rediversion under these permits). If the upstream reservoirs were storing water, then rediversion would not be permitted.

Comment: [page 16] When utilizing a priority system, the DEIR should acknowledge that in some cases, longstanding priorities are embodied in contractual commitments to water users and federal law rather than simply arising as a matter of State law. The most important example is the priority afforded to the San Joaquin River Exchange Contractors for water diverted by the USBR from the Bay/Delta Estuary. It would be unwise, unfair and inappropriate for the Board to disregard existing contractual priorities when implementing the 1995 Bay/Delta Plan. (FWUA)

Reply: The SWRCB is aware that many water right holders have contractual obligations and that some contracts specify the relative priorities of the parties who contract for water. However, the proposed project does not affect the relative priorities of the contractors to receive water under their contracts.

Comment: [page 16] In Flow Alternative 3, the FEIR should define the existing arrangement and decision process used to determine where re-regulated storage and flood control releases from Friant Dam are routed to: a) the Friant Kern Canal, b) the Madera Canal, c) down the San Joaquin River to Mendota Pool, or d) down the San Joaquin River to the Eastside Bypass and thence the lower San Joaquin River. We believe the FEIR should analyze alternatives which assume that portions of these high quality Friant Unit supplies are routed down the San Joaquin River (either directly or indirectly via exchanges or transfer) to meet flow and other objectives at Vernalis in above normal and wet years. (DFG)

Reply: Comment noted. In Alternative 3, the DWRSIM model attempts to meet all contractual demands at Friant before releasing water to the downstream channel. Alternative 5 assumes releases are made from Friant Dam.

Comment: [page 16] The text in this section should be revised to clarify the SWRCB's authority to require, by regulation or other means, all water users to contribute as necessary toward compliance with Bay/Delta flow objectives, consistent with Article X, Section 2 of the State Constitution and other applicable provisions of law. (SWC)

Reply: The SWRCB's authority to take action is discussed in Chapter I of the DEIR on p. I-3. The SWRCB believes that this discussion is sufficient.

Comment: [page 17] The flow alternatives should be applied to non-consumptive users. Diversions for non-consumptive uses may affect other water right holders. (CCWD, CCWD-2, DFG)

Reply: Hydropower projects, which are considered to be non-consumptive in their use, were not considered for allocation of responsibility under the flow alternatives. While it is true that they change the timing of Delta inflow, they have a minor impact on basin depletions. The comment suggests that altered timing of flow may create an impact on consumptive users of water. The analysis in the DEIR indicates otherwise. Power reservoirs tend to store water when the Delta is in "excess" conditions and release water when conditions are "balanced". This mode of operation makes more water available in the Delta during the summer months and therefore reduces the burden on other water right holders.

Comment: [page 17] In explaining how Flow Alternative 3 will work, the DEIR states that: "Because the SWP and the CVP export projects are junior in water right priority, all other water right

holders can continue to divert until the SWP and CVP projects are releasing previously stored water in an amount in excess of their instream obligations and exports. What does "instream obligations" mean in this quoted language? The Projects are currently obligated to release water to meet the objectives contained in the D-1485 Decision, which include instream obligations in the Delta. Does the quoted language mean those instream obligations as well? (CFWID, SFPUC)

Reply: The word "instream" has been changed to "inbasin" in the FEIR. This paragraph is a narrative version of the equations on page IV-18.

Comment: [page 017] Contra Costa County Water District expressed the view that Application 025516A on Kellogg Creek should be excluded from Table II-5. (CCWD)

Reply: Water rights qualified for inclusion on Table II-5 when the cumulative face value of all related rights held by a single entity exceeded 5,000 acre-feet. The Kellogg Creek right exceeds this threshold both individually and in combination with other rights held by CCWD for the Los Vaqueros Project. CCWD's argument that seldom is there more than 5,000 acre-feet actually available from the source may be true, but it is irrelevant to the analysis for Flow Alternatives 3 and 4.

Comment: [page 17] Alternatives 3 and 4 assume that, if water right holders diversions are curtailed, that the parties will either seek supplemental water supply contracts from the SWP, CVP, or from some other party with excess stored water or they will pump groundwater. Many parties took issue with this assumption. (BWGWD, BVID, BSWA, Butte Co., Calaveras Co. WD, CFWID, CWD, DWR, EDCWA, DFG, FWUA, GDPUD, HSVID, NHI, PCWA, SVWU, Sac, SFPUC, SJRG, Gore, Shasta CWA, SDWA, SFID, SVRC, TCCA, TCWA, USDOI, VWPA, W. Sac, WWD, YCFC&WCD, YCWA, YCWD)

Reply: Flow Alternatives 3 and 4 require curtailment of direct diversions and diversions to storage when the SWP and the CVP are releasing stored water to satisfy inbasin entitlements. When a direct diversion is curtailed, the water user can either contract for a supplemental supply, pump groundwater, or fallow land. When a diversion to storage is curtailed, the water user can either bypass the inflow to the reservoir or contract for a supplemental supply. To model the alternatives, the SWRCB had to make assumptions regarding the actions water users would take as a result of curtailing diversions under their appropriative water rights. The comments grouped under this response object to the SWRCB's modeling assumption that a Sacramento Basin water right holder will contract for a substitute water supply when a direct diversion is curtailed under Flow Alternative 3 or 4.

The comments claim the SWRCB's assumption is not valid because:

1) water right holders are more likely to pump groundwater than buy water from the SWP and CVP;
2) water will not be available from the SWP and CVP to replace the water lost through curtailed diversions;
3) the USBR is prohibited from entering into new contracts for CVP water. Further, there are no assurances the DWR will enter into new contracts for SWP water. Even if contracts could be obtained, the terms and conditions of such contracts are unknown; and
4) For entities not located downstream of project reservoirs or not in the authorized place of use of the SWP or CVP, receiving water from the SWP or CVP is physically impossible;

The comments also contend that the DEIR is deficient because it did not evaluate the economic impacts of higher water costs to entities that buy water from the SWP and CVP.

Response to number 1: A water right holder has several options to replace a water supply if a direct diversion is curtailed, and all water right holders are not likely to choose the same option. Choices will be based on individual resources, needs, locations and other factors. Predicting these choices for modeling purposes is speculative. Nonetheless, to model the hydrology that would result upon implementation of Flow Alternatives 3 and 4 assumptions had to be made regarding what water right holders would do if their direct diversions were curtailed. The general approach used in formulating modeling assumptions was to use the assumption that would produce the worst case environmental outcome of an alternative. For Alternatives 3 and 4, different assumptions were used for the surface water impact analysis and the groundwater impact analysis in order to effect the worst-case environmental outcome. For the surface water impact analysis of the Sacramento Basin, curtailed direct diversions were assumed replaced by contract water. For the groundwater impact analysis, curtailed direct diversions were assumed replaced by groundwater pumping.

In the San Joaquin Basin, there are no State of federal facilities from which contract water can be supplied. Thus, for the San Joaquin Basin, water right holders were assumed to pump groundwater to replace curtailed direct diversions. This assumption was used in both the surface water impact analysis and the groundwater impact analysis for Alternatives 3 and 4.

For the surface water analysis, the assumption that a Sacramento Basin water right holder would contract for water from the SWP and CVP produces the worst case environmental outcome. This occurs for two reasons: (1) the demand on surface water supplies is not decreased as it would be if diverters chose to fallow land, and (2) instream flows are not increased as they would be if diverters chose to pump groundwater. The "groundwater assumption" results in higher downstream surface flows than the "contract assumption" because groundwater return flows to the river would increase the surface water supply.

To produce the worst-case environmental outcome in the groundwater impact analysis of Alternatives 3 and 4, the SWRCB assumed that curtailed surface diversions would be replaced by groundwater pumping. This approach is the most reasonable way to discharge the SWRCB's CEQA obligations.

Response to number 2: Modeling results indicate that the SWP and the CVP have sufficient water supplies available to replace diversion curtailed in the Sacramento Basin under Alternatives 3 and 4. When a Sacramento Basin water right holder's diversion is curtailed, the model assigns water from the yield of the CVP or SWP to that diverter. The modeling results show that the yield of the projects is sufficient, even during the critical period, to replace the water lost to water right holders in the Sacramento Basin whose diversions are curtailed.

In fact, many of the Sacramento inbasin users may currently benefit from river flows that are augmented by project storage releases, whether or not they hold a contract for the water. The change under the "contracts assumption" is that direct diverters who presently do not have contracts must secure them and pay for the water that was previously diverted free of charge.

Response to number 3: Parties arguing that the USBR is prohibited from entering into new contracts often cite section 3404 of the CVPIA which directs the Secretary of the Interior not to enter into any new contracts for water supply except for fish and wildlife purposes until certain conditions are met. The parties assert that the SWRCB cannot use an assumption in its DEIR that is specifically precluded by federal law. This assertion is based on an assumption that the conditions in section 3404, one of which is the completion of the water right proceeding for which this EIR is prepared,

will never be satisfied. This is circular reasoning. When the conditions are satisfied, the USBR will be able to enter into new contracts. The EIR's assumption is valid.

This comment also raises issues regarding interpretation of water rights laws, including the Area of Origin statutes contained in Water Code sections 11460-11463 and 11128. The meaning of these sections is an issue in the water right hearing and will be decided, if necessary, in that proceeding. The purpose of the flow alternatives and the assumptions used in analyzing their effects is to provide a framework for analyzing the potential effects on the environment of implementing the flow objectives in the 1995 Plan. The alternative the SWRCB selects as a result of the hearing will comply with existing laws and will be feasible to implement. The physical effects of the described alternatives are analyzed in the EIR. The legal feasibility of these alternatives, however, must be decided as a result of the Bay/Delta Water Rights Hearing process concurrently with selecting an alternative.

The second part of this comment is about the uncertainty of terms and conditions on new contracts. In its comments on the DEIR, the U.S. Department of Interior stated that:

> "Congressional authorization would be required in order for Reclamation (USBR) to provide such a supplemental water supply to water right holders (or, to say it differently, to allow water right holders to continue to divert flows when their water rights have been determined to be deficient). The existing Reclamation contracting programs for right holders in the Sacramento River and the Colusa Basin Drain provide an example of how such a program could work. This program, if pursued, would require that limitations on diversion quantities (or irrigated acreage) be determined by year type or some other method to reflect the availability of water that will be equitable for the project (including the SWP if they are involved in this program) and project users, non-project water right holders, and the environmental objectives of the WQCP."

Notwithstanding the uncertainties as to the terms of any new contracts, the alternatives in the EIR describe the range of impacts that could occur as a result of implementing the 1995 Bay/Delta Plan.

Response to number 4: If a water right holders cannot be physically served from an SWP, CVP or other major reservoir, or is not within the authorized places of use of the SWP or CVP, the water right holder may be able to acquire "exchange" type contracts. Under this scenario, a water right holder whose direct diversion would be curtailed contracts with the DWR or USBR to release stored water to the Delta in lieu of the water right holder curtailing diversions. Another option is to contract with a direct diverter who has not been curtailed, to bypass water on behalf of the water right holder whose diversion has been curtailed. Other water marketing options are available as well as groundwater pumping. However, identifying a viable replacement supply for every curtailed diversion is not within the scope of this EIR.

The final aspect of this comment deals with the economic impacts of higher water costs associated with contracts. The comment is correct that these higher costs could have economic impacts on farmers. CEQA does not require that economic impacts be evaluated unless the economic impacts are likely to cause environmental impacts. The comments suggest two possible environmental impacts resulting from the economic impacts of replacing curtailed diversions with contract water.

The first impact mentioned is loss of habitat to migrating waterfowl if farmers do not reflood rice fields due to increased water costs. Since diversions are not curtailed in November, December and January, and only very occasionally in October under Alternative 3 and 4, this should not cause a significant environmental impact since these are the months when rice fields are reflooded (see Figures V-22 to V-30).

The second potential environmental impact mentioned in the comments is loss of habitat for wildlife if farmers retire land due to high water costs and convert the land to urban uses. Farms generally have higher wildlife habitat value than urban areas and widespread retirement of agricultural land and conversion to urban uses would have a significant environmental impact. However, there is no evidence to suggest that diversion curtailments will lead to large-scale retirement of farmland or conversion of that land to urban uses. First, the availability of farmland is not the critical factor driving the conversion of farmland to urban uses. Second, the severity of the water shortages modeled in Alternatives 3 and 4 are not great enough to cause widespread retirement of farmland. Third, a lack of water for farmland during parts of the year would make conversion of the land to urban uses unlikely because a year-round water supply would be required.

Very large areas of land in the Central Valley are being economically farmed using water supply contracts or pumped groundwater. These areas have extensive agricultural infrastructure, good soil and excellent climate. Based on these considerations, assuming that these lands will stay in production in the event of reduced water supply is reasonable.

A study by Archibald et al. (1992) of the response of the agricultural community to reduced water supplies concluded that agricultural producers will respond to decreased surface water supplies in one of three ways; (1) obtaining alternative sources of supply; (2) increasing water use efficiency; and (3) matching land use and cropping patterns to available water supplies through a combination of fallowing and shifts in crop type. (DEIR, pages VI-71 to VI-72).

Comment: [page 17] The term "natural and abandoned flows" must be specifically defined. Similarly, the kind of water not included in this statement, stored water, must also be specifically defined. (SEWD)

Reply: The term natural flow refers to water that is in the stream system as a result of the base hydrologic conditions. Water released from storage for specific purposes is "foreign in time", and therefore not part of the natural flow. Water that is imported from other watersheds and return flows from storage releases are also “foreign” waters. Return flows from water directly diverted from a stream system are considered to be abandoned and become part of the natural flow subject to downstream appropriation.

In our analysis of Flow Alternatives 3 and 4, we assumed that return flows from water released by the Projects from storage to meet inbasin demands remained under the Project's control. This assumption stems from the fact that the Projects have pumping facilities in the Delta which allow them to recapture their own return flows.

Comment: [page 17] Is the statement made in the last paragraph, "Water right holders receiving such notification are required to cease diverting or to contract for supplemental water supplies," meant to acknowledge the right of watershed protection users to purchase water pursuant to Water Code section 11462? The EIR should expand on this statement, and clarify what is meant. (SEWD)

Reply: The statement speaks for itself and does not address Water Code section 11462.

Comment: [page 17] In-basin users have an obligation to meet the flow needs of their particular tributary pursuant to state environmental laws. The Stanislaus, the Merced and the Tuolumne each

have instream flow obligations. The obligations of Friant under the Water Code, Public Trust and the Fish and Game Code must be addressed in the EIR for Alternative 3. (SEWD)

Reply: The purpose of the proposed project is to allocate responsibility for meeting objectives in the 1995 Bay/Delta Plan. As specified in the hearing notice issued by the SWRCB for this project, the SWRCB does not intend to set or implement instream flow objectives for the protection of resources in specific tributaries. Where instream flow objectives have been set through other actions, the analysis in the DEIR recognizes those obligations.

Comment: [page 17] The DEIR states "Under Alternative 3, the CVP deliveries to the Tulare Lake basin and the Kern River watershed are assumed to be in-basin deliveries." Treating Tulare Lake and Kern River basin deliveries as in-basin deliveries is not just an assumption, it has the support of statute, including Water Code sections 11460, 11463, and others. (USDOI)

Reply: Comment noted.

Comment: [page 17] Flow Alternative 3 defines CVP deliveries to the Tulare Lake basin and the Kern River watershed as inbasin deliveries. The reader is left to wonder, however, about the status of other CVP water right users. The EIR must include a complete list under each alternative of which CVP users are inbasin, and which are exporters. (SEWD)

Reply: Exports for all of the flow alternatives are defined on page II-11 of the DEIR. Exports include diversions at Clifton Court Forebay, Tracy Pumping Plant, Contra Costa Canal, and the North Bay Aqueduct. For Flow Alternative 4, exports also include diversions at the Friant-Kern Canal minus the deliveries from the canal to the Kings River basin (see Chapter IV, section F.1.b, of the DEIR).

Comment: [page 18] The description of Term 91 should be modified. The DEIR states that Term 91 "applies only when all of the Term 91 appropriators are junior in priority to in-basin project deliveries." This language implies that the applicability of Term 91 to in-basin permittees turns on the priority date of their permits relative to the CVP and SWP. This implication is incorrect, because the SWRCB has on previous occasions concluded that the Term 91 rationale applies to all in-basin appropriators of unregulated flows regardless of priority date. The purpose of Term 91 is to protect the USBR's and the DWR's rights to their previously stored water, regardless of the priority date of the in-basin permittees. (USDOI, WWD)

Reply: The quote is taken out of context. The discussion actually states that the present method of calculating Term 91 is applicable only when all of the Term 91 appropriators are junior to in-basin project deliveries, which is presently the case. The purpose of the discussion is to explain why the equation used to calculate supplemental water needs to be modified before it can be applied to all post-1914 appropriators. Term 91 presently applies only to water rights in the Central Valley issued after 1968 for the direct diversion of one cfs or more or diversions to storage of 100 acre-feet per year or more.

Comment: [page 18] The paragraph relating to Term 91 should clarify that the Term 91 rationale applies to all inbasin appropriators of unregulated flow regardless of priority date consistent with previous SWRCB interpretations. The purpose of Term 91 is to protect DWR's and the USBR's

rights to their previously stored water regardless of the priority date of the inbasin permittees. In SWRCB Order 84-2, the SWRCB specifically rejected an effort to limit the application of Term 91 based on priority. (DWR, SWC)

Reply: The comment suggests that Term 91 applies to all inbasin appropriators "regardless of priority date" and uses SWRCB Order 84-2 to support the claim. Order 84-2 states on page 25, "It should be noted for the record that the petitioners' (the USBR) suggestion that Term 91 could be applied uniformly to all permittees diverting from the Delta watershed could not be legally justified since many of those permittees have superior rights to the USBR and the Department of Water Resources. Consequently, their water quality obligations may differ substantially." The DEIR text is sufficiently clear and correct. Term 91 presently applies only to water right holders that have the term incorporated into their permits or licenses.

Comment: [page 18] Flow Alternative 3 assumes there are no export projects in the San Joaquin Basin. This conflicts with page IV-14 of the DEIR which states that the export projects include the state and federal export pumps and CVP/SWP storage reservoirs. (SJRG)

Reply: The State and federal pumps export water from the Delta, not the San Joaquin Basin. For the purposes of this analysis, the Delta is considered a common pool from which the projects export water that mostly originates in the Sacramento Basin. San Luis Reservoir is an off-stream reservoir which stores water that is diverted from the Delta. It does have a small inbasin component that may be exported. However, the amount of water contributed by the local watershed is negligible.

Comment: [page 18] The stated purpose for the San Joaquin River flow objectives is to move salmon smolts past the export pumps (an export-related impact). If the pumps are a significant cause of the decline of the species, then it is the export projects that must mitigate for their own project-related impacts. It is not only grossly unfair but a violation of California water right laws to require upstream, non-project senior water right holders to provide flows in lieu of export project pumping reductions. (SJRG)

Reply: Comment noted. The 1995 Bay/Delta Plan includes both flow objectives at Vernalis and export restrictions during the spring months. There is evidence that both the magnitude of San Joaquin River flow and export rates affect the survival of emigrating San Joaquin River fall-run chinook salmon. The VAMP was designed to provide additional information on the relative effects of these parameters.

Comment: [page 19] Several agencies had comments and suggested corrections to Tables II-5 and III-5. (OUWUA, SCBLOC, TCCA, USDOI)

Reply: Corrections have been made to Tables II-5 and III-5 as needed.

The Department of Interior pointed out that the priority date for New Melones A14858B is June 16, 1952, rather than July 7, 1988. SWRCB Decision 1616 specified that the rights affected by the Decision for New Melones would be junior to certain water right holders within the watershed that have later filing dates. However, with respect to Delta obligations and other water rights within the San Joaquin Valley at large, the EIR assumes that the priority is 1952.

Interior also commented that the Table II-5 would be more useful if the source of water for each right were identified. Each record is categorized by the DWR Depletion Study Area (DSA). This allows each individual water right to be placed in its respective watershed.

Comment: [page 19] Tables shown in the DEIR listing potentially impacted water rights (Table II-5) appear to have some inconsistencies and omissions. The impacts analysis provided in the DEIR only includes water right holders who have consumptive, post-1914 appropriative water rights with a cumulative face value in excess of 5,000 acre-feet per year. This cutoff precludes analysis of water rights held by wildlife refuges, whose loss of water may have a significant impact on the refuges' wetlands and other habitats and the species that depend on those habitats. (USDOI)

Reply: The analysis in the DEIR includes potential impacts to wildlife refuges. Table II-5 includes water rights for Sacramento, Sutter, Colusa and Butte Sink National Wildlife areas, administered by the USFWS, as well as Gray Lodge Wildlife Area under DFG supervision. With the exception of Butte Sink NWR, these areas are guaranteed a supply of water under the CVPIA and full level II supplies are included as a USBR inbasin obligation. Curtailment of these rights places a demand on storage at Shasta Reservoir and does not create an impact to the refuges themselves. Two water rights are potentially affected at Butte Sink NWR, with a cumulative total direct diversion of seven cfs. This small quantity of water could be replaced by use of groundwater.

Comment: [page 19] The DEIR's identification of major water rights (Table II-5) should include those water rights applications pending before the SWRCB. Specifically, there is no mention of EDCWA and the El Dorado Irrigation District's pending water rights under SWRCB Decision D-1635. Although the SWRCB granted the petitions for reconsideration and the water rights have not been finalized pending the SWRCB's ruling on the petitions for reconsideration, the water rights that are the subject of Decision 1635 will have priority of 1927. (EDCWA)

Reply: Only permitted water rights are included on Table II-5. Any water right application that has not been permitted will be subject to any standard conditions in force at the time the order approving the application is issued. Also, the SWRCB could exercise a reservation of jurisdiction, to make a permit issued on a previously approved application consistent with other similarly situated permits. Under Flow Alternatives 3 and 4, curtailment would take place when no water was available for appropriation at the 1927 level of priority.

Section E.1.d. Flow Alternative 4

Comment: [page 18] Under Flow Alternative 4, what happens when New Melones Reservoir is unable to provide both its share and the Friant share? (SJRG)

Reply: A modeling assumption under Flow Alternatives 1 through 6 is that releases from New Melones Reservoir for water quality control at Vernalis has the lowest priority. Under Alternative 4, New Melones Reservoir is always able to meet its own obligation to the Vernalis and Delta flow objectives, as well as those of the Friant Project. If there is insufficient water in the reservoir to meet all demands, water quality at Vernalis would not be achieved.

Comment: [page 18] If the SWRCB determines it must develop widely disparate alternatives based on watershed of origin principles, the Authority suggests revising Alternative 4 to accept that all

Friant Division deliveries are in-basin. To create the "bookends" now suggested by current Alternatives 3 and 4, the SWRCB could assume a different approach to applying the watershed protection statutes in Alternative 4. For example, Alternative 3 could remain unchanged and continue to assume an automatic priority under those statutes for in-basin uses, while Alternative 4 could assume no such automatic priority and require all existing and prospective users of Friant water to "prove up" their reasonable and beneficial uses. By altering its assumptions about how the watershed protection statutes operate, the DEIR would avoid assuming inaccurate facts, would offer the SWRCB an opportunity to receive input on how the watershed protection statutes are properly applied, and would create the contrasting approaches the SWRCB apparently seeks to analyze. (FWUA)

Reply: Comment noted. The issue of whether all Friant Division deliveries are inbasin is debatable. Flow Alternative 4 was analyzed to determine the effects of the two possible assumptions.

Comment: [page 18] Under Flow Alternative 4, allowing the Friant project obligations to be met with releases from New Melones Reservoir violates watershed protection/area of origin laws and makes them completely ineffective. If there is a need to improve flows for fisheries and water quality along the San Joaquin River and in the Delta, and that need is caused in part by the Friant project, the mitigation of that effect cannot be ordered to come from a different watershed or entity. (SDWA)

Reply: The principal reason for allowing Friant's obligations to be met by New Melones Reservoir is that under Flow Alternative 4, releases from Millerton Lake are required for only a limited time period each year. This type of release pattern does not appear reasonable down the dry stretch of the upper San Joaquin River. Under Flow Alternative 5, when year-round releases are required down the upper San Joaquin River, releases from Millerton Lake are reasonable.

Comment: [page 18] Flow Alternative 4 appears inconsistent with at least one purpose of the SWRCB's decision: "to equitably distribute the responsibility of meeting the objectives contained in the 1995 Bay/Delta Plan consistent with applicable law" because CVP contractors who rely on exports from the San Joaquin River Basin are not contributing an "equitable" share of the responsibility to meet the Vernalis flow objective. (WWD)

Reply: Comment noted. This comment does not address the environmental effects of the proposed project.

Comment: [page 19] Tables II-5 and II-6 should list the permits for the state and federal export pumps and San Luis Reservoir. (SJRG)

Reply: Table II-5 applies to water rights subject to curtailment under Alternatives 3 and 4. The right for the project export pumps are not on the table because they are considered to be junior to every right in the Central Valley with respect to the natural flow and are already curtailed before it becomes necessary to curtail any of the Table II-5 rights. San Luis Reservoir is not included because it is an offstream reservoir supplied from the Delta and the collection of local runoff is limited.

Rights for the CVP and the SWP Delta export facilities are included on Enclosure 2a of the Hearing Notice and are therefore open for consideration in the Bay/Delta Water Right Hearing.

Comment: [page 19] The permit issued on Application A025717 on Little Dry Creek in Butte County was filed for return flows from other rice fields. As water use has become more efficient, very little water drains into Little Dry Creek from upstream. However, Gorrill still uses its reservoir to store water from other sources. The SWRCB's action should not affect reuse of this water. If unappropriated water were available and the SWRCB enforced Term 91, water would not appear at the Delta due to downstream demands and Western Canal Water District's Fish Passage Project. The SWRCB should ensure that water affected by the decision can be delivered to the Delta in the time of need. (Gorrill)

Reply: Comment noted. Flow Alternatives 3 and 4 would be implemented on a real-time basis and curtailments imposed on progressively more senior water rights until an adequate quantity of water arrives in the Delta.

Comment: [page 20] The Dwight Hammond Reservoir encompasses 68 acres and is licensed to hold 348 acre feet of water. The EIR lists our permit for storage in Hammond reservoir as a major Central Valley Water Right (see Table II-5 of the DEIR, Vol. 1, Page II-20, Page II-23). In fact, we are not a major Central Valley Water Right user in this sense. On page II-17 of the EIR, a formula is developed for calculating cumulative face value. If we were to divert for the entire period authorized by the license, applying this formula we would meet your criteria of cumulative face value greater than 5,000 acre feet per year; the formula shows 6,000 acre feet per year. (190 days at 15 cfs) However, because the period during which we actually divert ends on or about July 15 of each year, the effective diversion period is more like 105 days. The formula would then give 3,472 acre feet, well below your threshold! (HRIA)

Reply: Hammond Reservoir Irrigation Association can be removed from Table II-5 if it petitions the SWRCB to reduce its licensed season of diversion. If it is true that the effective diversion period is 105 days, then curtailment of the right after the source has gone dry can cause no harm. The analysis did not assume that curtailment of this right would result in additional flow to the Delta.

Comment: [page 29] These comments point out that Alternative 4 proposes to meet the flow obligations of the Friant Project by releases from New Melones Reservoir and suggest that the logic for imposing the obligations of an export project on inbasin users needs to be explained. (SEWD, Stockton)

Reply: Alternative 4 describes a set of physical circumstances that would meet the flow objectives if implemented. The comments, as submitted, pose legal arguments and do not address the environmental impacts of the alternative. The SWRCB's water right decision will interpret and comply with the applicable legal requirements.

Section E.1.e. Flow Alternative 5

Comment: [page 29] The statement in the DEIR regarding the lack of hydrologic continuity between Putah and Cache creeks is inaccurate. The SWRCB should treat these watersheds in a manner consistent with the other Central Valley watersheds. (DFG, Moyle, PCC)

Reply: The reference to Putah Creek and Cache Creek lacking hydrologic continuity with the Delta has been removed. While there may be evidence to suggest that Putah Creek and Cache Creek do, at times, have hydrologic continuity with the Delta, they are not listed in Tables II-7 and II-8 because

they contribute little toward meeting the Sacramento Basin's share of the Delta outflow objectives under Alternative 5.

Comment: [page 029] It is unclear from the DEIR whether Flow Alternative 5 would apply to all water right holders in the Central Valley Basin, or just to the major reservoir operators described at page II-29 of the DEIR. Page II-29 states that the flow requirements imposed under Flow Alternative 5 initially would be the responsibility of the major reservoir operators. The SWRCB senior staff counsel's December 12, 1997 letter to William H. Baber IIIindicates that other water rights might be affected by the flow requirements depending upon the sizes of their diversions. However, there is no indication of what would trigger the application of Flow Alternative 5 to other water rights. (BSWA, BWGWD, BVID, Calaveras Co. WD, GDPUD, HSVID, PCWA, SJRG, SJWD, SFID, SVRC, W. Sac, YCFC&WCD, YCWA, YCWD)

Reply: Flow Alternative 5 would apply to the water users and operators of the reservoirs listed on Table II-8. The reservoirs listed on this table are either "rim" reservoirs or reservoirs that have a cumulative capacity of 100 TAF and are used primarily for consumptive purposes. In some cases, the minimum flows required from a tributary by Alternative 5 cannot be met through reservoir releases alone. In that case, the party listed in the third column of the table, "Entity Responsible for Remaining Deficiencies", would be required to curtail diversions until the required flow is met. The DWR and the USBR would be solely responsible for meeting flows on tributaries controlled by reservoirs that they operate.

Alternative 5 could be modified to require additional parties to help meet the flow requirements. This could occur if the SWRCB decided to further assign responsibility to other water users on the tributary, by water right priority, for instance. If this action were taken and it resulted in impacts greater than those already disclosed in the EIR, the SWRCB would prepare a supplemental environmental document.

Comment: [page 29] Flow Alternative 5 should be deleted from the DEIR because: 1) It requires more water than is needed to meet the water quality objectives in the 1995 Bay/Delta Plan, and this additional water might be used by the projects to help support export pumping rather than to support fish and wildlife in the Delta. 2) It is infeasible under CEQA because it is illegal under California water rights law (14 CCR section 15126(d)(5)). 3) It disregards water rights law and therefore does not meet the goal stated on page II-1 of being consistent with all applicable laws. 4) It violates the public trust doctrine because it does not balance the Delta public trust uses against out-of-stream uses. (BWGWD, BVID, BSWA, Butte. Co., Calaveras Co. WD, CFBF, CWD, EDCWA, FWUA, HSVID, PCWA, RCRC, SVWU, Sac, SFPUC, SJRG, SJWD, Shasta CWA, SDWA, SFID, SVRC, W. Sac, YCFC&WCD, YCWA, YCWD)

Reply: 1. If Alternative 5 is selected, the amount of water required by this alternative can be fine-tuned to require that only the amount needed for fish and wildlife purposes must be released by each responsible party, and that no party has an unreasonable burden. The DEIR does not specify precise responsibilities but analyzes and determines the potential significant environmental effects of a range of alternatives that include Alternative 5.

The purpose of an allocation under any alternative, including Alternative 5, is to provide water for water quality and environmental purposes. If Alternative 5 produces more water than is needed to meet the objectives, the excess water could be exported in the absence of additional safeguards.

However, measures regulating the export pumping are included in Alternative 5 and could avoid or mitigate any adverse environmental effects of additional export pumping.

The comment reflects water right concerns that exporting excess water could unduly deprive water right holders in the watersheds of the Delta. If Alternative 5 is adopted, these concerns will be addressed in the water right decision.

2. The recent amendments of the CEQA guidelines revised and clarified the provisions that formerly were in California Code of Regulations, title 14, section 15126, regarding the use of feasible alternatives and how to determine whether alternatives are feasible. The current provisions are set forth in section 15126.6. Section 15126.6 (a) provides in part that:

> " . . . . An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason. . . . ."

Section 15126.6(f) explains the rule of reason, including the role of feasibility. It provides in part:

> "(f) Rule of reason. The range of alternatives required in an EIR is governed by a "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. . . . The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making.
>
> (1) Feasibility. Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries . . . , and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site . . . . No one of these factors establishes a fixed limit on the scope of reasonable alternatives."

The purpose of the CEQA documentation is to provide a range of alternatives for accomplishing the project purpose, to analyze the environmental effects of the alternatives, and to propose mitigation measures. Under the above provisions in CEQA, the SWRCB can include an alternative in an EIR if the alternative is potentially feasible. Further, whether or not an alternative is feasible is subject to the rule of reason. Alternative 5 is potentially feasible, contributes to the range of alternatives provided in the DEIR, helps foster the development of a reasoned decision, and otherwise meets the criteria for inclusion as an alternative. Accordingly, it continues to be an alternative in the EIR. This comment does not address the environmental effects of the alternatives or the adequacy of the mitigation measures, but rather raises legal issues that may be decided in the water right proceeding after consideration of the evidence and legal arguments presented by the parties. The water right proceeding is the appropriate forum for the SWRCB to decide on an allocation method to establish responsibilities for meeting the water quality objectives, and the legal arguments made in the hearing will be given all due consideration in reaching a decision.

The water right proceeding also is the place for the SWRCB to determine whether or not any alternative it selects is legal. California water rights law does not speak directly to whether or not a proportional allocation of responsibility such as is described in Alternative 5 would be legal in the context of establishing responsibility to help meet water quality objectives. A similar allocation method was proposed in 1993, but was not adopted. If the SWRCB adopts an allocation based on the

principles used in Alternative 5, it will do so only after it finds that the allocation complies with California water rights law.

3. The SWRCB intends to adopt an alternative that it finds is consistent with all applicable law, including water rights law.

4. If Alternative 5 is adopted, any required balancing will be included in the water right decision or order resulting from the water right hearing.

Comment: [page 29] With respect to Flow Alternative 5, mandated Friant Dam releases for purposes of achieving water quality objectives would contravene Congressional intent with respect to the operation of the Friant Division. Also, under CVPIA Section 3406(c)(1), none of the water dedicated to fish and wildlife purposes may be released from Friant Dam in the absence of a subsequent Act of Congress. As a result, any releases from Friant Dam to implement objectives set forth in the 1995 WQCP are precluded by an express Act of Congress. (FWUA)

Reply: The DEIR analyzed a range of physical alternatives for implementing the 1995 Bay/Delta Plan water quality objectives, including physical releases of water from Friant Dam. Whether this or other flow alternatives would violate a Congressional directive or the CVPIA is a legal issue and not a comment on the environmental effects of the alternatives. Legal argument on this issue should be presented in the water right hearing.

Comment: [page 29] The DEIR does not discuss how the amount of water was determined for Flow Alternative 5, or why that alternative provides flows to the Delta in excess of that required under the Bay/Delta Plan. Further modeling studies to refine the water supply impacts of this alternative should be conducted. (BSWA, Butte Co., Calaveras Co. WD, NHI, PCWA, SFPUC, SVWU, Sac, SJRG, SVRC, W. Sac, YCFC&WCD, YCWA)

Reply: Flow Alternative 5 establishes monthly flow requirements for each of the major watersheds tributary to the Delta. The methodology used in the calculation of monthly instream flow requirements sets the average flows needed to meet the outflow requirements as minimum instream flow requirements. This type of methodology will always result in a long-term average exceedance of the outflow requirements. The DEIR on page V-2 states that "further refinement of this alternative (Alternative 5) would result in modeled water supply impacts closer to those of the other alternatives." The SWRCB does not intend to do any additional modeling of Alternative 5. If Alternative 5 is selected as the preferred alternative, the SWRCB may elect to refine the alternative, or it may elect to implement the alternative as modeled. The SWRCB has included two flow alternatives in the DEIR that do not fully meet the flow objectives (Flow Alternatives 7 and 8), and the inclusion of one alternative that exceeds the flow objectives is not unreasonable. However, the impacts associated with implementation of Alternative 5 should be less than those disclosed for Alternative 5 in the DEIR. Thus, further modeling of the alternative is unnecessary in the DEIR for the purpose of disclosing the environmental effects of Alternative 5.

Chapter 4 of the DEIR has been amended to include a description of the methodology used to develop the minimum flow requirements specified by Flow Alternative 5. Tables showing the calculations are included in Volume 2of the FEIR, Technical Appendix 4.

Comment: [page 29] On Table II-8 (page II-33), does "USBR Contractors" on the Stanislaus River include the Oakdale and South San Joaquin Irrigation Districts? (SJRG)

Reply: Under Alternative 5, the Stanislaus River "USBR Contractors" listed in Table II-8 would include Oakdale and South San Joaquin Irrigation Districts.

Comment: [page 29] The Bear River Canal is jointly owned by PG&E and NID. PG&E has a contractual obligation to supply water to PCWA from the Bear River Canal. Adoption of Alternative 5 without consideration of factors such as these could lead to inequity and disruption of efforts by others to accomplish the same goals the SWRCB has set forth. (PCWA-1)

Reply: Table II-8 (page II-33) will be revised to add PG&E as a responsible party under Alternative 5 for the Bear River.

Curtailment of contractual water deliveries by PG&E to PCWA could cause significant economic impacts (see Table XI-2, Feather River region). PG&E's diversions into the Bear Canal are supported in large part by diversion for hydroelectric generation from the Yuba River and the Drum Canal system. PG&E is not listed on Table II-8 for the Yuba River because there is no net depletionary effect with respect to the Delta. However, with respect to the Yuba River there is an annual export of about 600 TAF per year.

Comment: [page 29] There are watersheds other than those listed on Table II-8 within the Central Valley that provide runoff into the Delta as evidenced by the publication California Central Valley Unimpaired Flow Data (2nd Ed., DWR, 1987). The SWRCB's modeling of the flows required under Alternative 5 should take the existence of historical flows from such other watersheds into consideration so that contributions required from other watersheds are not overstated. (SJRG)

Reply: Other Central Valley watersheds that contribute inflow to the Delta, but were not included in the division of responsibility for Alternative 5, tend to have very little unimpaired runoff during the critical summer months and do not have reservoirs of sufficient size to be included on Table II-8. Due to low summer flows, the percent contribution required of Table II-8 watersheds is not significantly overstated during the May to September period.

Comment: [page 29] Cache Creek lacks hydraulic continuity with the Bay/Delta Estuary when water is needed to meet the Bay/Delta flow objectives. Therefore, water rights in the Cache Creek watershed and similar watersheds should be deleted from the lists of rights subject to Flow Alternatives 3 and 4. (YCFC&WCD-2)

Reply: The reference to Putah Creek and Cache Creek lacking hydrologic continuity with the Delta has been removed from the FEIR. YCFC&WCD provided testimony in the Bay/Delta Water Right Hearings to support its claim that Cache Creek lacks hydraulic continuity with the Bay/Delta Estuary under unimpaired conditions at times when the Delta is in balanced conditions. A review of the testimony suggests that the lack of hydraulic continuity that Cache Creek experiences at times under current conditions is due, at least in part, to modifications to the Settling Basin and the channeling of water in the Yolo Bypass.

In any event, the present application of Term 91 provides an exception to the diversion curtailment if, in the absence of the diversion, surface water continuity with the Delta would not exist.

Consequently, if YCFC&WCD is correct regarding the lack of hydraulic continuity, Cache Creek watershed water rights would not be affected by inclusion of Term 91 in their water right permits and licenses.

Comment: [page 29] As part of YCWA's April 30, 1997 correspondence to the SWRCB staff regarding necessary study corrections, YCWA suggested methods to appropriately account for consumptive use of applied water. The discussion of Flow Alternative 5 on page II-29 of the DEIR references depletions utilized for allocating requirements within a tributary. The basis for estimating the depletions used in the DEIR analysis is not discussed in the DEIR. (YCWA-1A)

Reply: YCWA's April 30, 1997, letter was the basis for calculating Yuba River depletions. Additional text has been added to Chapters II and IV. Further detail is included as Volume 2 of the FEIR, Appendix 4.

Comment: [page 29] There are numerous reservoirs in the foothills that have, as stated on page II-29, a "cumulative capacity of at least 100 TAF". First, the term "cumulative capacity" should be defined. The EIR should make clear whether the term refers to a chain of reservoirs or one reservoir with active and inactive storage. Second, the operations rules for the identified reservoir should be described. It should be clear whether releases will be in a pulse flow or spread evenly over a season. (DFG)

Reply: When a single water right holder owns multiple reservoirs used for consumptive purposes, which individually are less than 100 TAF, but cumulatively exceed 100 TAF, they were listed on Table II-8. An example would be the Yuba River watershed reservoirs operated by Nevada Irrigation District. Reservoir size is equal to the total capacity rather than the active storage. The tributary flow requirements are set forth in Table II-7. Each tributary must provide the specified minimum flow, for a specified month, at a specified location. The flow is presumed to be spread evenly throughout the month.

Comment: [page 29] We agree with the statement concerning the lack of hydraulic continuity with the Delta of Putah and Cache creeks, at least during periods when Delta flow objectives are controlling on SWP and CVP operations. We are working with parties in both watersheds on stipulations that recognize this lack of continuity and relieve the parties of the obligation to contribute to Delta outflow to meet flow objectives. (SWC)

Reply: Comment noted. The reference to Putah Creek and Cache Creek lacking hydrologic continuity with the Delta has been removed.

Comment: [page 29] The description of Alternative 5 is unclear. (CFWID)

Reply: The text for Flow Alternative 5 has been revised to include additional detail and Volume 2 of the FEIR, Appendix 4, describes the calculation methods. In general, nothing more should be read into the alternative than is included in the text. The commentor is specifically concerned with the manner in which responsibility is allocated on the Bear River. Meeting specified inflow to Camp Far West Reservoir is the responsibility of Nevada Irrigation District. Meeting specified minimum instream flows at the Wheatland gage is the responsibility of Camp Far West Irrigation District and

South Sutter Water District. Overall responsibility for meeting Delta outflow under Alternative 5 is assigned to the Projects.

Comment: [page 29] The DEIR should have clearly described the effects of implementing Alternative 5 on the resident fish, amphibians, stream-dependent wildlife, reservoir-dependent wildlife, and ability to attain the Basin Plan objectives for temperature, dissolved oxygen and other parameters in the waters downstream of the dams listed in Table II-8. Most of these foothill water projects are several decades old and there are biological communities that have adjusted to the existing operations. Some of the species in these communities are designated as threatened, endangered or of special concern. More disclosure on the operational details of this alternative and more environmental analysis on the biological and water quality elements associated with the foothill reservoirs is needed. (DFG)

Reply: In general, Alternative 5 increases tributary flows and would be considered beneficial to instream aquatic resources. Analysis of the Alternative's effect on reservoir fish and downstream riparian vegetation is included in Chapter VI. Temperature modeling of the Sacramento, Feather, American and Stanislaus rivers has been included in the FEIR; an analysis of the effect on dissolved oxygen seems unnecessary. Exactly which endangered species or communities are referenced in the comment is unclear.

Comment: [page 29] To the extent that the SWRCB intends to apply Flow Alternative 5 to other appropriative water rights in the Central Valley basin, it must not do so based upon the rates of their diversions, as described in the SWRCB senior staff counsel's December 12, 1997 letter. Unless Flow Alternative 5 obligations are allocated among affected appropriative right holders on the basis of relative priorities, appropriative water right holders like HSVID may be forced to curtail their diversions while junior right holders could continue diverting. (HSVID)

Reply: Flow Alternative 5 requires the release of stored water from certain reservoirs to meet the flow objectives in the 1995 Bay/Delta Plan., Hot Springs Valley Irrigation District is not required to release stored water under Flow Alternative 5.

Comment: [page 29] Assuming that the existing water rights priority system and Area of Origin protections are maintained, we question the assumption in Flow Alternative 5 that needs within the Delta would be allocated to the Sacramento Valley. Because both the Sacramento and San Joaquin rivers are tributary to the Delta, a more hydrologically based approach would be to divide water needs within the Delta amongst the two tributaries, but only if accomplished without altering the existing water rights priority system. (Shasta CWA)

Reply: Comment noted.

Comment: [page 29] Flow Alternative 5 seeks to set the responsibility for necessary flows in each major tributary watershed so that in combination with flows from other tributaries, the flows downstream will be adequate to meet the Plan objectives. Again, SDWA does not oppose any such alternative assuming that first the adverse impacts attributable to the State and Federal Projects are mitigated by those projects in accordance with applicable California laws. Such a system would also need to allow for other diverters within the areas and watersheds of origin to contract with the projects if those parties give up water under the alternative. (SDWA)

Reply: Comment noted.

Comment: [page 29] The last paragraph states that Putah Creek and Cache Creek are not included in Tables II-7 and II-8 because of lack of hydrologic continuity with the Delta. The Calaveras River should also be included in this statement, and lack of hydrologic continuity can be established for this tributary as well, and there is no legal basis to distinguish among watercourses similarly situated. (SEWD)

Reply: There is no evidence that the hydrologic circumstances of the Calaveras River are similar to those of Putah and Cache creeks. The commentor can submit evidence at the Bay/Delta water right hearing to support its recommendation that Alternative 5 should be amended and that the obligations of the Calaveras River water users under this alternative be distributed to other watersheds.

Comment: [page 29] Why the Board included or excluded certain reservoirs under Alternative 5 for Bay/Delta responsibility is not explained. For example, Placer County Water Agency's Middle Fork Project does not have any Delta responsibility because its consumptive use is less than 30,000 af. In the future, this project may have a consumptive use of 120,000 af. "Present" consumptive use may not be an appropriate criteria. (USDOI)

Reply: It was assumed that the Projects would take responsibility for tributaries over which they have control (i.e. upper Sacramento, Feather and American rivers). Therefore, the American River flow requirement is assigned to the USBR. Though there are major reservoirs upstream of Folsom Lake operated by SMUD and Placer County Water Agency, they are at the present time operated as hydro projects; they have little or no consumptive use of water and make substantial releases during the summer when the Delta is in a balanced condition. If these reservoirs were to develop significant consumptive use in the future, and the SWRCB were to adopt Alternative 5, the SWRCB could consider adding them to the list of responsible parties at a later date.

Comment: [page 29] The DEIR states that diverters dependent on storage would receive reduced deliveries if there were insufficient storage to meet both the Flow Alternative 5 flow requirements and the diverters' requirements. Accordingly, the DEIR implies that Flow Alternative 5 would require releases of stored water. The DEIR does not state that concurrent SWP/CVP diversion curtailments would occur; therefore, SWP/CVP exports would be allowed to export water released from local water supply storage. In fact, Tables V-1 and V-2 show substantial increases in SWP diversions, which further indicate this Flow Alternative would require release of water stored in non-CVP/SWP reservoirs for CVP/SWP export. (YCWA-1A)

Reply: Flow Alternative 5 requires reservoir operators on major tributaries to bypass inflow or release from storage sufficient water to meet their tributary's share of the Delta flow requirements. Table II-8 lists parties responsible for implementing Flow Alternative 5. As shown on Tables V-1 and V-2, this sharing of Delta flow requirements frees up SWP and CVP water for export in comparison to Flow Alternative 2 in which the SWP and CVP are exclusively responsible for meeting flow requirements. Because the Delta acts as a common pool for water released upstream, some of the water molecules from non-SWP/CVP reservoirs will be exported, just as they are under current conditions. However, Flow Alternative 5 requires the release of non-SWP/CVP water specifically for the purpose of meeting Delta flow requirements. As compared to the base case, Tables V-1 and V-2 show that SWP/CVP exports are reduced under Flow Alternative 5.

Comment: [page 29] The DEIR's analysis of Flow Alternative 5 is not sufficiently detailed for us to be able to provide detailed comments. (YCWA-1A)

Reply: Additional detail on Flow Alternative 5 has been added to the FEIR in Chapters II and IV. A new Appendix (A4) in Volume 2 of the FEIR has been added detailing the division of responsibility calculations.

Comment: [page 29] Flow Alternative 5 is internally inconsistent for two reasons. First, it would allocate Bay/Delta responsibilities among watersheds on the basis of the relative unimpaired flows of the various watersheds, but then would not use this same allocation method within each watershed. Second, Flow Alternative 5 would rely solely on unimpaired flows to allocate Bay/Delta obligations among various watersheds, and would ignore the substantial quantities of water that are exported from watersheds like the Yuba River watershed. Flow Alternative 5 therefore would place an unreasonably high burden on the water users in watersheds like the Yuba River watershed from which substantial quantities of water are exported. (YCWA-1A)

Reply: Flow Alternative 5 is not internally inconsistent. A purpose of the alternative is to reproduce the hydrologic patterns (at a reduced level) in both the Delta and the upstream areas. In order to achieve this purpose, a reduced flow obligation in the tributaries cannot be established because of exports from the watershed. In addition, the alternative recognizes that operators of the major projects on each tributary have substantial control over that tributary's contribution to Delta flows. Consequently, responsibility to achieve flow releases is assigned to these parties.

Comment: [page 29] Under Flow Alternative 5, the DEIR proposes flow releases from reservoirs and rivers that have little or no hydraulic continuity with the Delta. Releases from these sources would suffer significant losses to reach the Delta or the mainstem of Sacramento or San Joaquin River -- e.g., requiring releases from the Fresno and Chowchilla Rivers (Hidden and Buchanan Dams, as noted above), from Stony Creek (Black Butte Dam), and from the Cosumnes River (Sly Park Dam) in order to provide flows in the Delta. (USDOI)

Reply: Releases from tributaries which presently have little hydraulic connection to the Delta are only required when the same tributaries make a measurable contribution to Delta inflow under unimpaired conditions. Thus, if the stream naturally went dry during the summer, there would be no summer obligation under Alternative 5. Though it is true that there is frequently no continuity in some streams under present conditions, this circumstance is due to excessive stream and groundwater diversion. Channel losses that might occur now, would decline over time.

Comment: [page 29] The DWRSIM model oversimplifies the hydrologic and structural/geometric conditions in the reach from Friant to the Merced River. Actual conditions on the upper San Joaquin River, Fresno River, and Chowchilla River are such that they are not in hydraulic continuity with the middle reach of the San Joaquin River, except in times of high flows or what would reasonably be described as flood conditions. (USDOI)

Reply: Comment noted. The reach between Sand Slough and Mariposa Bypass could be restored.

Comment: [page 29] Water losses on the upper San Joaquin River have not been considered in the analysis for Flow Alternative 5. This leads to an overstatement of the water reaching the lower San Joaquin and the Delta. The losses on the upper San Joaquin River range from 15 percent to 100 percent depending upon flow and antecedent conditions. Under certain conditions, the proposed releases will not get to the Merced River and therefore will not contribute to flow at Vernalis. If this is corrected in the modeling and analysis of this alternative, either more water would have to be released from Friant to meet the requirement in the Delta (with corresponding greater impacts on the Friant Unit) or less would have to be shown reaching the Delta (with corresponding lower environmental benefits). It should be noted that, historically, the San Joaquin River had extended periods when the natural river flow at Friant Dam was reduced to zero. (USDOI)

Reply: The San Joaquin River portion of DWRSIM does not fully account for depletions between Friant and Mendota Pool. This is a deficiency in the model, rather than Flow Alternative 5. If an approach similar to this flow alternative were adopted, the depleted groundwater basin in the vicinity of Gravelly Ford would recharge, and losses would decline over time.

Comment: [page 29] The manner in which the cutbacks would be allocated under Flow Alternative 5 to the water users receiving deliveries of water supply from storage would vary depending upon the contractual relations. The EIR assumes that contractual provisions will not affect the allocation of cutbacks. This is incorrect. (BSWA)

Reply: Comment noted. Actions taken under contracts cannot be reasonably predicted, and consequently any assumptions as to contractual allocations are too speculative to evaluate. Speculation is not required in an EIR (14 CCR section 15145).

Comment: [page 29] In Table II-8, Flow Alternative 5 (page II-33), the Stony Creek watershed is implied to be under USBR contract when only a portion of the water supplies are under USBR contract. (OUWUA-1)

Reply: Table II-8 is not intended to imply that all water in Stony Creek is under USBR contract. Table II-8 indicates that the parties responsible for contributing to the flow requirements from Stony Creek, under Alternative 5, are the USBR contractors and others that receive water from Black Butte Reservoir.

Comment: [page 29] Alternative 5 may not satisfactorily address area of origin and other water right concerns. For this reason, EDF recommends that the SWRCB investigate and analyze an alternative which combines Alternative 4's methodical approach to meeting environmental objectives while respecting the relative legal priorities of water users and Alternative 5's allocation of responsibility according to tributary of origin. (EDF)

Reply: Comment noted.

Comment: [page 29] Flow Alternative 5, under which monthly average flow requirements are established for the major streams which are tributaries to the Delta, also has some merit and is the only alternative that would require maintenance of flows in the San Joaquin River below Friant Dam. Additionally, this alternative addresses not only environmental objectives within the Bay/Delta but

those upstream as well. If the SWRCB is to take a serious approach to its implementing the narrative objective for salmon, it must extend its purview upstream of the Delta and into tributaries. (EDF)

Reply: Comment noted.

Comment: [page 29] On Table II-8 (page II-33), the Feather River entry should be clarified. Not all of the Feather River entities are SWP contractors. (DWR)

Reply: The table entry "SWP Contractors" has been revised to read: "SWP Contractors & Feather River Districts".

Comment: [page 29] The description of Flow Alternative 5 would be more informative if it specifically identified releases from Friant Dam as a source of water to meet the Vernalis flow and Delta outflow objectives in the 1995 Bay/Delta Plan. (WWD)

Reply: The description of Flow Alternative 5 indicates that the tributary systems and reservoirs affected by this alternative are listed in Tables II-7 and II-8 (which list the San Joaquin River and Friant Dam). The text has been modified to specifically identify releases from Friant Dam as a source of water to meet the Vernalis flow and Delta outflow objectives.

Comment: [page 30] Stony Creek is a federally adjudicated stream with regard to natural flow, and East Park Reservoir is under the jurisdiction of the US District Court. Because of this, all references to East Park Reservoir and the natural flows in Stony Creek should be removed from this document. (SCBLOC, TCCA)

Reply: Although Stony Creek has been adjudicated in federal court, it is not exempt from SWRCB jurisdiction. Table II-8 indicates that the parties responsible for contributing to the flow requirements from Stony Creek, under Alternative 5, are the USBR contractors that receive water from Black Butte Reservoir. East Park Reservoir is not listed in Table II-8. The reference to East Park Reservoir in Chapter III (Environmental Setting) is part of the discussion of surface water development in the Central Valley and will remain in the document.

Comment: [page 30] The flow requirements under Flow Alternative 5, which are shown in Table II-7, suggest that there are unimpaired flows on Stony Creek during the months of July through October. Historical records show that unimpaired flows drop as low as zero cfs above Black Butte Reservoir. Please refer to the schedules for: 1) Total inflows to East Park Reservoir from 1918 to 1949; and 2) Natural runoff of Stony Creek at Black Butte Reservoir contained in the Orland Project Inventory Report of 1951, USBR, prepared by Marshall Young and C. L. Hudspeth, February 1951. These documents show that Stony Creek is primarily dry during the months of July, August, and September, with minimal amounts of runoff in October. This contradicts the table showing that in critical years, Stony Creek is to supply as much water, and in some months more water, as in wet years when there is historically no runoff. The flows for Stony Creek that are listed in Table II-7 should be corrected to reflect this historical accuracy. (OUWUA-1, SCBLOC, TCCA)

Reply: A review of the unimpaired flow data indicates that the commentor is essentially correct regarding the historical flows on Stony Creek. The Department of Water Resources unimpaired flow data which was used for calculating proportional shares of responsibility under Alternative 5 relied on

the same 1951 report. In many years the unimpaired inflow to Black Butte Reservoir may be zero in any given month, particularly July through October. However, the flow requirements established under Alternative 5 are based on average monthly flows for each year type. Even among critical years, for each month, there is unimpaired flow in Stony Creek in at least some years. Therefore, the average monthly unimpaired flow used in calculating the proportional shares of responsibility is a quantity greater than zero.

Comment: [page 30] Table II-7, Flow Alternative 5, indicates that the unimpaired flows of the Sacramento River are a result of the unimpaired flows of its tributaries which are also listed on the same table (i.e. Stony Creek, Feather River, Yuba River and American River). The effect of this allocation method is a double hit to these tributaries. (OUWUA-1)

Reply: The Sacramento River flows represent unimpaired flows upstream of Red Bluff plus Sacramento Valley floor accretions, plus certain other minor tributary streams not otherwise listed. There was no double counting of the listed tributaries.

Comment: [page 30] Review of the results in Table II-7 and review of prior SWRCB results indicate depletions estimated for Yuba County are excessive. Because of the high percentage of rice land served in Yuba County, the consumptive use of applied water for irrigation is about 60 percent. Additionally, the fall flooding diversions for waterfowl habitat and rice stubble decomposition, about 25 percent of the YCWA total diversions, have essentially no consumptive uses. In total, the YCWA depletion is roughly 50 percent of the historically diverted flow. Table 1 shows the appropriate percentage shares of YCWA depletions that result from use of correct YCWA values. (YCWA-1A)

Reply: The depletions used for allocating responsibility within the Yuba River watershed were based on the Table 1 deliveries mentioned in the comment. Yuba County Water Agency's depletion was calculated as average deliveries (232.5 TAF) times the basin efficiency for DWR Depletion Study Area 69 (0.697) times a non-recoverable loss factor (10%). We assumed that allowances for fall rice flooding were built into the DWR land use studies which lead to a determination of the basin efficiency.

Comment: [page 30] Table II-7 indicates the watershed flows assumed necessary to achieve the Bay/Delta flow objectives for each month of each year type for Flow Alternative 5. What were the Vernalis flows that were assumed necessary to achieve the Bay/Delta flow objectives? Why are two sets of requirements given for Tuolumne River flows? (Stockton)

Reply: A discussion of the methodology used to determine Alternative 5 flow requirements for the tributaries has been added to the end of Chapter IV. Please see this discussion and the supporting tables in Volume 2 of the FEIR, Appendix 4.

Two sets of requirements are given for Tuolumne River flows in order to assign responsibility to the various water right holders on that river. In Table II-7, "Tuolumne River Inflow to Don Pedro Reservoir" is the allocation of Delta flow objectives assigned to the major water right holders upstream of Don Pedro Reservoir, namely the City and County of San Francisco. The flows listed for "Tuolumne River at Mouth" are the total flows for the river and include the amount contributed from upstream of Don Pedro (which are assumed to be passed through). The difference between the two sets of flow requirements would be the allocation of responsibility assigned to the Turlock and Modesto Irrigation Districts.

Comment: [page 32] Table II-7. It is not clear why the 40-30-30 index is applied to the San Joaquin River Basin. This may give an incorrect measure of the wetness and thus water availability of the San Joaquin Basin. (USDOI)

Reply: The 60-20-20 index was applied to the San Joaquin tributaries in the months of October and February through June when the Vernalis flow objectives are in effect. In months when Vernalis flow objectives are not established and only Delta outflow objectives are in effect, the Sacramento 40-30-30 index was chosen because the majority of water comes from the Sacramento River system.

Section E.1.f. Flow Alternative 6

Comment: [page 32] The FWUA questions the technical feasibility of Flow Alternative 6. To the extent it is not technically feasible, it should not be considered. (FWUA)

Reply: Flow Alternative 6 is technically feasible.

Comment: [page 32] Flow Alternatives 6 and 7 fail to include meeting San Joaquin River water quality requirements with water from San Luis Reservoir and/or the Delta Mendota Canal. Failure to analyze these alternatives as well as reduction of exports and land fallowing precludes adequate consideration of the corresponding water quality and other benefits which would result from full compliance in meeting the Vernalis water quality standard and correcting portions of the degradation of the San Joaquin River upstream of Vernalis. (CDWA)

Reply: The DEIR did not analyze the effect of achieving compliance with the Vernalis salinity objective through recirculation because of the large water supply impact of this approach. The salinity of Delta water in the summer is substantially higher than the salinity of Stanislaus River water. Therefore, the quantity of Delta water needed for dilution purposes to achieve the Vernalis salinity objective would be several times greater than the quantity of Stanislaus River water.

Comment: [page 32] EDF opposes Flow Alternative 6, the "recirculation alternative". We believe that the proposed increase in exports, particularly during the April-May period, allegedly to protect fish in the San Joaquin River, would be damaging to the resources it is designed to protect. (EDF)

Reply: Comment noted.

Comment: [page 32] Incorporating the benefits of the combined SWP/CVP diversion points in Alternative 6 prevents it from being comparable to the other alternatives, the impacts of which could potentially also be mitigated by use of the joint diversion points. (SLDMWA)

Reply: Comment noted. Recirculation would most likely be prohibitive due to water supply impacts in the absence of the use of joint points of diversion, thus maximum use of joint points of diversion was included in this alternative. See also response to comments for Chapter 5 Section A page 2.

Comment: [page 32] Alternative 6 assigns an additional requirement to the CVP for SDWA's consumptive use needs. What is the legal basis for this obligation? What is the impact of this obligation on CVP export capacity? (SLDMWA)

Reply: South Delta's consumptive use needs are an obligation of the CVP under Alternative 6. South Delta Water Agency claims that they are senior water right holders to the CVP exporters and to the CVP reservoirs in the San Joaquin Basin and that CVP operations cause injury to southern Delta diverters.

In most years, the South Delta's consumptive use needs are met by incidental flows and no recirculation is needed. Over the 73 years of record, recirculation requires about five percent of CVP pump capacity in June and about four percent in July. Recirculation occasionally requires as much as a third of the pump capacity in June (two of 73 years) and thirteen percent of pump capacity in July. Recirculation requires less pump capacity in other months.

Comment: [page 32] The recirculation scheme proposed by Alternative 6 is more extreme compared with Alex Hildebrand's recirculation proposal, which has no water supply impacts or power cost impacts to SLDMWA. The DEIR does not analyze a recirculation approach that does not impact CVP water supplies. (SLDMWA)

Reply: Comment noted. The recirculation alternative analyzed in the DEIR is not the same as the recirculation alternative proposed by Mr. Hildebrand.

Comment: [page 32] The FEIR should analyze the impacts on San Luis Reservoir demands and minimum water levels, and the impacts of implementing the combined points of diversion for purposes other than CVP export supply restoration. Energy use and costs, and an analysis of who will pay such costs, must also be contained, along with specific identification of mitigation measures and a mitigation plan for the impacts not offset by use of the combined diversion points. (SLDMWA)

Reply: Regarding minimum water levels, parties testified during the Bay/Delta water rights hearing that water quality problems occur at San Luis Reservoir when storage drops below 300 TAF. DWRSIM modeling indicates San Luis storage drops below 300 TAF 23 times in 73 years under the base case (Alternative 1) versus 12 times under Alternatives 2 and 6.

San Luis Reservoir demands can be compared by analyzing change in storage between the alternatives. Modeling shows the average CVP share of storage at San Luis Reservoir as follows:

Alternative	June	July	August
1	485 taf	328 taf	228 taf
2	557 taf	362 taf	212 taf
6	513 taf	313 taf	184 taf

Water delivery changes for each alternative can be found in Tables V-1 and V-2.

In regard to use of the combined points of diversion, if the other flow alternatives included joint point provisions, as modeled in Alternative 6, the water supply impacts of implementing those alternatives would be reduced. If, like the other flow alternatives, Alternative 6 did not include the joint point provisions, the water supply impacts of Alternative 6 would be substantially greater than reported in Chapter V. If the SWRCB adopted Alternative 6 without the use of joint point of diversion, further analysis would be required to evaluate the water supply impacts and possible increase in groundwater

consumption that would occur in the absence of use of joint points of diversion. However, the SWRCB does not propose to adopt Alternative 6 without the JPOD; thus, mitigation measures for impacts not offset by use of joint points of diversion are not identified in this document.

The energy impacts of implementation of Alternative 6 are found in Chapter VI of the EIR. CEQA does not require mitigation of economic impacts that result from a proposed project, including the economic impact of the loss of hydropower generation on individual producers, unless economic impacts lead to secondary environmental impacts. Therefore, the DEIR will not be revised to address these effects; however, the SWRCB will consider economic impacts disclosed in the DEIR and entered into evidence by parties at the hearing when it makes its decision on how to implement the 1995 Bay/Delta Plan.

Comment: [page 32] Flow Alternative 6 should not be considered by the SWRCB. It does not meet at least two of the project goals: (1) "equitably distributing the responsibility of meeting the objectives contained in the 1995 Bay/Delta Plan" and (2) "to develop, conserve and utilize water in the public interest." The CVP export contractors bear the full responsibility for meeting the San Joaquin objectives, which is not in the public interest. The approach is not within applicable law and the analysis is inadequate. (SLDMWA)

Reply: The SWRCB will decide in its water rights decision the extent to which the project goals will be satisfied. The decision will be consistent with all applicable law and will be based on evidence received at the hearing.

Comment: [page 32] Flow Alternative 6 is described as a combination of DMC releases for Vernalis flow objectives and for SDWA riparian diversions. What are the monthly Vernalis flows required by this assumed combination of releases? (Stockton)

Reply: The monthly flows at Vernalis under Alternative 6 are provided in Table VI-4 of the revised DEIR. The DWRSIM model was operated to meet all 1995 Bay/Delta Plan Vernalis flow objectives and the needs of the South Delta Water Agency.

Comment: [page 32] From the description of Flow Alternative 6, it appears that only CVP export contractors would incur reduced water supplies as a result of the proposed recirculation. Imposing this burden exclusively on export contractors is inconsistent with at least one purpose of the proposed SWRCB goal "to equitably distribute the responsibility of meeting the objectives contained in the 1995 Bay/Delta Plan consistent with applicable law." (DEIR at II-1.) Furthermore, CVP contractors that do not discharge subsurface or irrigation return flows to the San Joaquin River bear no more responsibility for salinity problems than SWP contractors. (WWD)

Reply: Comment noted.

Comment: [page 32] SDWA believes that the recirculation of water through the Delta Mendota Canal, the Newman Wasteway, and back down the San Joaquin River is a viable and reasonable way of providing the necessary flows. When testimony is given at the upcoming hearings, SDWA will provide more information pursuant to the modeling and other testing has been done in support of its proposal. (SDWA)

Reply: Comment noted.

Comment: [page 34] Are the values in Table II-9 required to maintain water quality objectives, support irrigation requirements, or both? Are there any data to support these values? (SJRG)

Reply: The flow values in Table II-9 were provided by Alex Hildebrand at a meeting with the staff of the SWRCB on December 19, 1996. The flows were presented as the "Minimum Required Flows for the South Delta Water Agency (At Vernalis)." Given that the numbers appear reasonable for the acreage and crop requirements within SDWA, the amount claimed by SDWA was used to model Flow Alternative 6.

Section E.1.g. Flow Alternative 7

Comment: [page 33] The basis for retaining Flow Alternative 7 needs to be clearly stated. The alternative has been effectively replaced by Alternative 8 and the SWRCB should delete Alternative 7 from the EIR. (FWUA, Stockton, USDOI)

Reply: The basis for Alternative 7 is the "Letter of Intent," a negotiated agreement regarding allocation of responsibility for San Joaquin River flows. The parties to the agreement no longer recommend adoption of the agreement, and support Alternative 8, the San Joaquin River Agreement, instead. However, Alternative 7 will remain in the document because it was considered by the SWRCB as an implementation alternative.

Comment: [page 033] Alternative 7 does not meet either the DFG's recommendations as we have testified before the SWRCB on prior occasions or the 1995 Bay/Delta Plan's flow objectives for the San Joaquin River. The DFG is concerned that the "Letter of Intent" flows may not provide the equivalent level of protection intended by the flow objectives for the San Joaquin River contained in the 1995 Bay/Delta Plan. (DFG)

Reply: Comment noted. Under Alternative 7, the flow objectives for the San Joaquin River at Vernalis in the Bay/Delta Plan were replaced by minimum flows at Vernalis in the Letter of Intent.

Comment: [page 33] How were San Joaquin River flows modeled under Flow Alternative 7? Did the SWRCB assume that the Letter of Intent flows were the maximum flows? The Letter of Intent was not limited to the flows specified therein, only that the SJRG would guarantee certain minimum flows in order to assist the USBR in meeting the Vernalis flows. The difference between the Letter of Intent flows and the 1995 Bay/Delta Plan flows could be met by the USBR, other water users not providing water under the Letter of Intent, or by water purchases from willing sellers. The VAMP with a barrier at the head of Old River is an appropriate alternative to implementing the 1995 Bay/Delta Plan as proposed in the EIR. (SJRG)

Reply: Complete descriptions of Flow Alternative 7 (Letter of Intent) and Flow Alternative 8 (SJRA) are included in the FEIR. Under Alternative 7, the flow objectives for the San Joaquin River at Vernalis are replaced by minimum flows at Vernalis in the Letter of Intent. Under Alternative 8, the pulse flow objectives for the San Joaquin River at Vernalis are replaced by the target flows in the San Joaquin River Agreement (SJRA). The SJRA provides a mechanism for conducting the VAMP, an

experiment to determine the relative impact of flow in the San Joaquin River, and exports in the Delta, on chinook salmon smolt survival in the lower San Joaquin River.

Comment: [page 33] EDF opposes Flow Alternative 7, under which target flows at Vernalis would be partially met by the "Letter of Intent" flows. These flows are far lower than those specified by the 1995 Bay/Delta Plan and would not offer an equivalent level of protection for outmigrating San Joaquin River salmon. (EDF)

Reply: Comment noted.

Comment: [page 33] Alternative 7 has mischaracterized the Letter of Intent. As currently defined as Alternative 7, the flow objectives at Vernalis would be reduced to the level of flows identified by the Letter of Intent. The Letter of Intent would not have this result. The Letter of Intent identified its flows as only the level of flows for which the participating San Joaquin tributary entities would contribute supplemental releases. The Letter of Intent did nothing to frustrate higher flows from being provided at Vernalis by the actions or programs of others. (SFPUC)

Reply: Comment noted. In the flow modeling for Alternative 7, the flow objectives for the San Joaquin River at Vernalis were replaced by minimum flows at Vernalis in the Letter of Intent.

Comment: [page 33] It is unclear to what extent Alternative 7, and the conditions described in the "Letter of Intent" reflect the conditions that the Vernalis Adaptive Management Program (VAMP) may create. (USDOI)

Reply: Complete descriptions of Flow Alternative 7 (Letter of Intent) and Flow Alternative 8 are included in the FEIR. Under Alternative 7, the flow objectives for the San Joaquin River at Vernalis in the Bay/Delta Plan are replaced by minimum flows at Vernalis in the Letter of Intent. Under Alternative 8, the pulse flow objectives for the San Joaquin River at Vernalis are replaced by the target flows in the SJRA. Reduced exports are also modeled. The SJRA provides a mechanism for conducting the VAMP, an experiment to determine the relative impact of flow in the San Joaquin River and exports in the Delta on chinook salmon smolt survival in the lower San Joaquin River.

Comment: [page 33] Generally, SDWA has no opposition to an adaptive management program that seeks to determine what flows are appropriate in order to preserve fisheries. However, SDWA believes water supplied through recirculation can provide flows necessary for the VAMP Project. The California Constitution's requirement of reasonableness in the use of water should lead the Board to conclude that recirculation of water is a better option then using fresh water supplies on the east side of the San Joaquin Valley which are needed for other in-basin uses. (SDWA)

Reply: Comment noted.

Section E.2. Suisun Marsh Salinity Objectives Alternatives

Comment: [page 34] Change the first paragraph of this section to read: "An exception to this responsibility may be made when: (1) hydrologic conditions are such that even with full bore SMSCG operation and implementation of the Delta outflow objectives the objectives cannot be

achieved; or (2) the SMSCG cannot be operated full bore and/or is physically modified in response to regulatory constraints." (DWR)

Reply: Revision made to text.

Comment: [page 35] Is Table II-10 considered in the analysis of the effects of Flow Alternative 7 in the DEIR? (SDWA)
Reply: Table II-10 is considered. Please refer to the description of Alternative 7 on page II-33 and the discussion of DWRSIM in Chapter IV.

Section E.2.a. Suisun Marsh Alternative 1 (No Project a)

Comment: [page 35] The last sentence of this section should read: "The DWR and the USBR take no further action to meet the D-1485 western marsh objectives." (Delete the rest of the sentence.) (DWR)

Reply: Deletion made to text. The deletion says... "and the objectives are occasionally not met." This fact is made clear in the analysis in Chapter 7, and need not be part of the project description.

Section E.2.b. Suisun Marsh Alternative 2 (No Project b)

Comment: [page 35] Change the 4th sentence of this section to read: "For the purposes of this analysis, the plan is assumed to consist of flow augmentation up to 80 cfs in Green Valley Creek with North Bay Aqueduct water and construction..." (DWR)

Reply: Revision made to text.

Section E.2.c. Suisun Marsh Alternative 3

Comment: [page 35] The last sentence of this section should read:, "The DWR and the USBR take no further action to meet the D-1485 western marsh objectives." (Delete the rest of the sentence.) (DWR)

Reply: Deletion made to text. The deleted text read, "... and the objectives are occasionally not met." This fact is made clear in the analysis in Chapter 7, and need not be part of the project description.

Section E.2.e. Suisun Marsh Alternative 5

Comment: [page 34] SWC recommends Suisun Marsh Alternative 5 with modifications that include an update of the actions proposed in the Suisun Marsh Preservation Agreement Amendment III (the SMPA Amendment does not include Green Valley Creek flow augmentation nor redirection of Morrow Island drainage to Suisun Bay). (SWC)

Reply: Comment noted.

Comment: [page 36] The DEIR should be revised to include a more recent description of the Suisun Marsh Preservation Agreement Amendment III actions. (DFG, DWR)
Reply: The SWRCB recognizes that the actions currently proposed under Amendment III are different than those described in the DEIR. Specifically, the consolidation and redirection of Morrow Island drainage is no longer being considered because modeling has shown that the action would not achieve the proposed objectives. In addition, the DWR and the USBR were unsuccessful in obtaining an agreement with the Fairfield Suisun Sanitation District. Therefore, augmentation of Green Valley Creek flow with treated effluent is no longer an option. In lieu of the increased Green Valley Creek flows, Amendment III would increase funding for drought management activities by $22,000 per year. If an agreement for increased flows were obtained in the future, these funds would no longer be provided.

All references to Alternative 5 have been edited to reflect the current version of Amendment III. September operation of the SMSCG is now the only Amendment III action which can be modeled. The modeling and FEIR tables have been revised to reflect this change.

Comment: [page 36] We agree with DWR's recommendations regarding the description of Suisun Marsh Preservation Agreement proposed Amendment III. (SWC)

Reply: Comment noted.

Section E.3. Salinity Control Alternatives in the San Joaquin Basin

Comment: [page 36] There is really one alternative of tile drain reoperation and not four as discussed in the EIR; one alternative is legally insufficient. (SEWD, WWD)

Reply: Three alternatives and a base case were analyzed. Two of the alternatives did not achieve the project goals of reducing the need for dilution water from New Melones Reservoir.

Comment: [page 36] The last paragraph states that several salinity control actions are being implemented or evaluated in other forums by other parties. The EIR does not elaborate on the actions, the parties undertaking the action, or the timing or likelihood of action. This must be addressed if the SWRCB intends to justify its lack of action on those other actions. (SEWD)

Reply: The discussion in Chapter II is intended to be a summary. A detailed discussion of these actions appears in Section A.3. of Chapter VIII.

Comment: [page 36] What are the Vernalis flows that are assumed to be necessary to achieve the Vernalis salinity objectives? Do the required Vernalis flows vary with the month to reflect the assumed upstream salt discharges? (Stockton)

Reply: There is no single Vernalis flow necessary to meet the Vernalis salinity objective. DWRSIM uses a flow/salinity relationship to calculate the salinity of the San Joaquin River at Maze Road which is upstream of the confluence of the San Joaquin and Stanislaus rivers. Different flow/salinity relationships are used for the March through September and October through February periods. A mass balance calculation is then used to determine the quantity of water needed from the Stanislaus River to achieve the Vernalis salinity objective.

The flow/salinity relationship at Maze Road indicates that the salinity objective would be met at Maze Road when the flows at this location are at the following levels:

April – August	= 2,400 cfs
September, March	= 1,350 cfs
October - February	= 1,290 cfs

Section E.3.a. Salinity Control Alternative 1

Comment: [page 37] The SWRCB should note that the USBR has not met Southern Delta Salinity requirements in the past and that the New Melones Interim Operations Plan, which the USBR proposes to operate to during the VAMP, will also result in violating the salinity objectives. (SDWA)

Reply: Comment noted.

Comment: [page 37] Salinity Control Alternative 1. CCWD believes that water quality improvements are best achieved by reduction in the source of contaminants, not by the "provision of dilution water." (CCWD)

Reply: Comment noted.

Section E.3.b. Salinity Control Alternative 2

Comment: [page 37] The SDWA believes that surface and subsurface drain discharges as well as wetland releases should be coordinated to protect water quality downstream. The SWRCB and Regional WQCB should not continue to commit the error of examining salt loads and not concentration of salts. The Vernalis objectives to protect beneficial uses are based on concentration only and not loads. (SDWA)

Reply: The DEIR analyzed reoperation of wetland releases and tile drain discharges and found that reoperation of wetlands did not result in water savings. Salt loads are used to compare the magnitude of problems but concentration alone determines compliance with objectives.

Comment: [page 37] Salinity Control Alternatives 2 and 3 involve the issuance of waste discharge requirements for purposes of controlling the timing of discharges. While this may cause some improvement, it still relies on dilution. The WDRs should actually set limits on the amount of TDS that can be in the discharges at those times and at other times of the year for the protection of the receiving waters. (Stockton)

Reply: Comment noted.

Comment: [page 37] The description of Salinity Control Alternative 2 that appears in Chapter II is inconsistent with the description of the same alternative that appears in Chapter VIII. (CVRWQCB)

Reply: The description of Salinity Control Alternative 2 in Chapter II has been amended to be consistent with the description of the alternative in Chapter VIII.

Section E.4. Southern Delta (Excluding Vernalis) Salinity Objectives Alternatives

Comment: [page 37] SDWA believes it is misleading to list local agricultural diversions as one of the problems for the interior Delta salinity. The return flow from local agricultural diversions only becomes an issue because of the salt load from the CVP service area and because the export pumps create the stagnant zones, null zones, and reverse flows; and because San Joaquin River flows have been tremendously decreased. Therefore, those return flows only become an issue given the projects. (SDWA)

Reply: It is technically correct to list local agricultural diversions as one of the [several] sources contributing to degraded Delta salinity.

Comment: [page 38] The text states that implementation of the 1995 Bay/Delta Plan objectives at Vernalis will increase flows at Vernalis. This is only true in certain months of the year. Given that the system only receives a certain amount of precipitation each year, an increase at one time results in a decrease at another time. (SDWA)

Reply: Comment noted. For some alternatives, an increase in flows at Vernalis at one time will result a corresponding decrease in flows at another time. However, for other alternatives, a net increase in flows at Vernalis would be achieved through the curtailment of diversions for consumptive use in the upstream areas or through recirculation of water pumped from the Delta.

Comment: [page 38] The discussion of Southern Delta Salinity Alternatives on page II-38 and Joint Point of Diversion alternatives on page II-40 et seq. should also note that implementation of these alternatives would require full mitigation of impacts on other legal users of water such as the Contra Costa Water District. (CCWD)

Reply: The SWRCB has no information to suggest that the proposed project will have significant adverse impacts to CCWD.

Section E.4.a. Southern Delta Salinity Alternative 1 (No Project)

Comment: [page 38] The alternatives for meeting southern Delta salinity objectives should include source control of drainage water, including measures previously recommended by other programs. (USDOI)

Reply: Actions to reduce salinity through source control are discussed and evaluated in Chapter VIII. The purpose of the analysis in Chapter VIII is to determine the effect of previously unevaluated source control actions to determine whether they potentially result in water savings at New Melones Reservoir. These actions are considered apart from the barrier operations in Chapter IX because they are separable. By not assuming source control in the San Joaquin River, the evaluation of barrier impacts discloses a worst case scenario.

The RWQCB is in the process of setting objectives for salinity and boron. The RWQCB anticipates completing the Basin Plan update by December 1999. Any specific actions taken as a result must comply with CEQA.

Section E.4.c. Southern Delta Salinity Alternative 3

Comment: [page 37] Salinity Control Alternative 3 would also help reduce nutrients and other pollutants which cause algal blooms and subsequent decay which contributes to low DO problems in the lower San Joaquin River. (Stockton)

Reply: Nutrient loading could be reduced depending on the barrier operations.

Section E.5. Dissolved Oxygen Objective Alternatives

Comment: [page 38] The four alternatives related to DO objectives each state that the Stockton RWCF discharge quantity is limited to present levels. Other objectives refer to quantity and quality. Please confirm that these are assumptions used in the model for evaluation, and not necessarily the elements of an alternative the SWRCB proposes to impose. For example, it should be clarified that the alternatives are not intended to limit discharge quantity to current levels. (Stockton)

Reply: The dissolved oxygen model used 1996 levels of effluent discharge from the Stockton Treatment Plant as 'current levels' for the purposes of modeling. The alternatives are not intended to limit Stockton Treatment Plant discharge quantity or quality to a 1996 level.

Comment: [page 38] Water temperature is to some degree a controllable factor affecting DO.To the extent water temperature is not controllable, the DEIR should note that DO also is not completely controllable, since DO saturation is a function of water temperature. Finally, the addition of oxygen to the system may be a factor that can be controlled to some degree. (Stockton)

Reply: The DEIR acknowledges the relationship between temperature and DO concentrations. DO concentrations are not completely controllable; however, the modeling results depicted in Chapter X show that, in the absence of temperature manipulation, other factors can be manipulated to provide benefits to DO concentrations in the lower San Joaquin River. The addition of oxygen to the system via the USCOE's Aeration Facility is discussed in the DEIR.

Comment: [page 38] The DEIR identifies BOD from non-point sources as a controllable factor affecting DO concentrations. Yet, there is no mention of any effort to control these sources in any alternative. Focus on point sources alone (and only one point source) is inequitable and ineffective. It may be that there is no mandatory permitting program for non-point sources, but that is not cause to ignore a serious issue. If there is to be meaningful, long-term improvement in the San Joaquin River with respect to DO and other parameters, the non-point source issues must be addressed. Further, improvement in non-point source management will also reduce sediment oxygen demand loads. (Stockton)

Reply: BOD loading from non-point sources affects DO in the San Joaquin River. Stockton's discharges have a direct effect on DO levels between Turner Cut and Stockton, as shown by the modeling studies. Actions to control non-point sources would duplicate the efforts of the CVRWQCB and are beyond the scope of this proceeding. The CVRWQCB has indicated that it will conduct an analysis of TMDL for BOD on the lower San Joaquin River and has assigned this work a high priority. The SWRCB anticipates that a TMDL analysis will be conducted within the next five years.

Comment: [page 38] The DEIR and the alternatives point to significant difficulty in achieving the DO objective. Stockton believes this points to the need to evaluate the reasonableness of the objectives themselves. If the objectives cannot reasonably be achieved, they are not consistent with Porter-Cologne, particularly Water Code section 13241. Alternatively, if the SWRCB has not defined an alternative that actually achieves the objectives, then it has not complied with Water Code section 13242. Stockton believes it is not proper for the SWRCB to adopt an objective without evaluation of the feasibility of attainment, then to be satisfied with a program that does not achieve it. This creates an untenable situation for point source dischargers, who are likely to be subjected to increasingly strict controls in such a situation, irrespective of their relative impact on water quality. (Stockton-2)

Reply: The SWRCB does not propose to revisit the Plan objectives in this proceeding. Review of the dissolved oxygen objectives is a subject that should be addressed at the next triennial review. The DEIR acknowledges that none of the alternatives will result in the achievement of the dissolved oxygen objective in all water year types.

Comment: [page 39] The DEIR states that "Environmental effects of barrier construction and operation are analyzed in the DWR's DEIR for the ISDP, and they are summarized in this report." However, the effects of barrier operation on DO concentrations were not analyzed in the DWR DEIR. The assumed fall operation of the head of Old River barrier in the ISDP was during October only. The SWRCB DEIR assumes that both the temporary and permanent head of Old River barrier is operated in September-November (DO Alternatives 2, 3, and 4). The effects of the flow objective alternatives, South Delta salinity objective alternatives, and DO objective alternatives on San Joaquin River DO concentrations have not been previously evaluated. This should be clarified to focus attention on the SWRCB DEIR evaluation of the DO objectives.

Also, the ability to achieve this 6 mg/l DO objective has not been previously evaluated. Results of the Stockton water quality modeling indicate that it may not be possible for any alternative to satisfy the 6 mg/l objective under conditions likely to occur in September (warm temperatures and low flows). Results indicate that achieving the 6 mg/l in October and November is much more likely with several of the alternatives. (Stockton)

Reply: The effects of barrier operations on dissolved oxygen are included in the SWRCB's DEIR. The statement in question has been revised to clarify that the analysis of operations to implement objectives in the 1995 Bay/Delta Plan is not included in the DEIR for the ISDP and has not been evaluated previously.

Comment: [page 39] There appears to be an inconsistency between Chapter II and Chapter X. Chapter II describes combination alternatives, while Chapter X (page X-13) evaluates components separately. This made it difficult to evaluate each of the alternatives and the effect each would have on dissolved oxygen (DO) levels. (CVRWQCB)

Reply: On September 29, 1998, the SWRCB requested the City of Stockton to remodel Dissolved Oxygen Alternative 4. The Chapter II and Chapter X description of Alternative 4 (page II-39) has been revised as follows: "The 1995 Bay/Delta Plan flow objectives are met by implementation of one of the flow alternatives. The permanent barriers proposed in the ISDP are constructed and operated and the barrier at the head of Old River is closed in September, October, and November. The discharge quantity from the Stockton treatment plant is at the present levels; however, the effluent meets CBOD and ammonia effluent limits as specified in the NPDES permit issued by the CVRWQCB and shown in Table X-6. Stockton complies with the permit limits by constructing

enhanced treatment facilities." The modeling study previously identified as Alternative 4 is now discussed in Section A.1, which describes model studies conducted to determine the sensitivity of DO concentrations to variations in river flow, temperature, waste load, algae, and sediment oxygen demand.

Section E.5.c. Dissolved Oxygen Alternative 3

Comment: [page 39] SDWA believes the head of Old River barrier should be operated in a manner to assist in the meeting of the DO standard; however, an inoperable barrier may lower water levels in the southern Delta and decrease the water available for downstream riparian users. The SWRCB should not consider an alternative that de-waters a portion of the San Joaquin River. (SDWA)

Reply: Comment noted. The SWRCB is aware of the effect of the head of Old River barrier on southern Delta water levels. The effects of an operable head of Old River barrier on southern Delta water levels are discussed in Chapter IX, section C.2.a of the DEIR.

Section E.6. Combined Use of SWP and CVP Points of Diversion Alternatives

Comment: [page 39] SDWA believes that the Joint Point of Diversion is a helpful method of maximizing benefits to various beneficial uses. However, there would appear to be no basis in law for instituting a "no net loss" to exports at the expense of other parties. If the SWRCB wishes to proceed with a Joint Point of Diversion to attempt to maximize exports, it should concurrently require that there be no net loss to other users especially those who are superior in right to exports. It would be truly novel indeed if in meeting water quality control objectives the Board sought to protect export interests without seeking similar protection of superior water rights. (SDWA)

Reply: Comment noted. The EIR considers a full range of JPOD alternatives. The alternatives are not based on a "no net loss" policy.

Comment: [page 39] The DEIR should evaluate impacts to San Joaquin River water quality from implementation of Joint Points of Diversion alternatives. (Stockton)

Reply: Flows at Old River are dependent on a number of factors; however, the controllable factors under the Plan are flows at Vernalis and pumping operations at the export pumps. In comparing the change in Vernalis flow under the Joint Point of Diversion Alternatives as compared to Alternative 2 (Tables XIII-8 and XIII-9 in revised Chapter 13 of the DEIR), implementation of the Joint Point of Diversion alternatives has virtually no effect on flow at Vernalis. Export pumping is not likely to affect flow at Stockton during the period when DO is a concern because either the agricultural barriers or the Head of Old River barriers will minimize the flow of the San Joaquin River towards the pumps. Therefore, the joint points of diversion are not expected to result in significant adverse effects on DO. Joint Point of Diversion Alternative 6 would result in reduced flow at Stockton, which could possibly result in a small reduction in water quality. This alternative is no longer supported by the parties who proposed it.

Comment: [page 40] The discussion of alternatives should note that implementation of any alternative will require full mitigation of impacts to affected water users. (CCWD-2)

Reply: This comment does not appear to address environmental effects of the alternatives. However, adoption of a water right decision implementing one of the described alternatives would not necessarily require full mitigation of adverse environmental impacts. If an agency is able to make one of the three allowable findings in Public Resources Code Section 21081, or if it adopts a Statement of Overriding Considerations after the FEIR is certified, mitigation for significant environmental effects is not required. In this case, the SWRCB intends to address impacts on the water rights of other legal users of water, as needed, in the water right decision. At this time, however, the SWRCB believes that the EIR correctly concludes no significant water quality impact will occur, and therefore no mitigation is necessary.

Comment: [page 40] Use of the joint point of diversion must only be allowed if the effects of additional pumping result in no harm to the other parties. (SDWA)

Reply: This comment does not address the environmental effects of the project, but rather, makes recommendations for approval of the DWR's and USBR's petition for joint use of points of diversion.

Comment: [page 40] SWC supports JPOD Alternative 5. (SWC)

Reply: Comment noted.

Section E.6.d. Joint POD Alternative 4

Comment: [page 40] With regard to Joint Point of Diversion Alternative 4, it should be noted that even though it may not be apparent in the monthly modeling, one benefit of a joint point of diversion is the ability to switch diversions at the CVP or SWP to reduce entrainment of delta smelt. It would be appropriate for the DEIR to discuss or evaluate this benefit. (USDOI)

Reply: A discussion of the benefit associated with flexibility to shift export locations between the SWP and CVP has been added to Chapter XIII, Section E.4.

Comment: [page 40] EDF supports Joint POD alternative 4, similar to that defined in SWRCB Order 95-6, in which the use of a joint point of diversion is allowed only if it is done to protect ecological resources, and does not result in a net increase in exports. We urge the SWRCB to adopt such an approach in its water rights hearings. Before such a policy can be implemented, however, it is imperative that unambiguous “baseline” export limitations (as well as the other flow, operational, and financial requirements discussed below) be firmly established -- so that net changes in exports can be objectively measured and enforced. EDF also recommends that the SWRCB add a scenario to this alternative under which space in San Luis Reservoir is dedicated to fish and wildlife, for the banking of any and all "joint point" water for subsequent use in reducing Delta exports at critical times. (EDF)

Reply: Comment noted.

Section E.6.e. Joint POD Alternative 5

Comment: [page 40] For the joint point, we recommend Alternative 5, which authorizes the joint point for all purposes consistent with the existing operating criteria. The implementation of the joint point will be contingent on DWR and the USBR completing satisfactory agreements that set forth conditions under which the combined use of SWP and CVP points of diversion could occur. (DWR)

Reply: Comment noted.

CHAPTER III. ENVIRONMENTAL SETTING

Comment: SDWA believes that the DEIR should at length describe the effects the projects have on the environment in order that the DEIR be complete. (SDWA)

Reply: A discussion of the major water projects, as they pertain to and affect the hydrology of the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, is included in the chapter on Environmental Setting. The operation of these projects is considered part of the existing conditions for analyzing the impacts of implementing the 1995 Bay/Delta Plan. The description of these projects (with certain revisions) is adequate and it is beyond the scope of this EIR to analyze the environmental impacts of these projects either individually or collectively.

Comment: [page 001] Many aspects of the DEIR rely on information and conclusions contained in the draft Programmatic Environmental Impact Statement (the "draft PEIS") prepared by the USBR pursuant to Section 3409 of the CVPIA or on other draft documents. The draft PEIS, however, was only released to the public in November 1997, more or less simultaneously with the release of the DEIR. The DEIR thus relies on materials which are themselves both in draft form and which have not been subjected to public comment. Such reliance is unjustified, and renders the DEIR suspect, especially because statements and conclusions reached by the draft PEIS are subject to substantial change or revision following public comment. A draft Environmental Impact Statement is just that, a draft, and should not be the basis upon which later documents rely until the public comments and resulting revisions to the underlying documents as a result of those comments have been implemented. Similarly, the literature cited in support of Chapter III of the DEIR, which describes the "Environmental Setting," lists six documents which were apparently relied upon in the preparation of that chapter. Three of those six documents are themselves draft documents. (FWUA)

Reply: The information taken from the draft PEIS included (1) physical descriptions of surface water supplies and facilities operations, and (2) physical descriptions of the recreation facilities on the lakes and rivers in the Central Valley. The information taken from the draft Program EIR for the SWP Supplemental Water Purchase Program, for the most part, included accounts of the vegetation, fish, and wildlife (including special status and sensitive species) found in the various regions of the affected area. This information is factual in nature and was not considered to be controversial. To our knowledge, the information that was taken from these documents does not contain any "draft conclusions," but simply compilations of descriptions and accounts based on reputable sources. The SWRCB technical staff reviewed this information and was reasonably certain of its accuracy. However, as other comment letters have pointed out, there are some omissions and misstatements contained in the DEIR chapter on the Environmental Setting and with the help of the public review process, the proper revisions have been made in the FEIR.

Comment: [page 001] In the environmental setting chapter, the SWRCB fails to acknowledge the importance of agricultural lands to the environment. Agriculture is mentioned in different sections with respect to land use and economy, but there is no discussion on agriculture as a significant component of the existing environment. The SWRCB is required by law to analyze each alternative's potential effects on agriculture. We recommend that the SWRCB include a specific section on agricultural resources in its DEIR which analyzes the broader environmental implications that may result from reallocating agricultural water to satisfy the 1995 Bay/Delta Plan. (CFBF)

Reply: A specific section on agricultural resources is not necessary in Chapter III of the EIR. It is common practice to address agricultural resources under the topic of land use, as was done in the DEIR. Chapter III (Environmental Setting) of the DEIR clearly makes the point, in the sections on land use and economy, that agriculture is the major economic and land use activity for the Sacramento River Basin, San Joaquin River Basin, Tulare Lake Basin, and the Sacramento-San Joaquin Delta. It also makes clear, in the sections on water use, that irrigated agriculture is the largest component of net water demand in these affected areas. Chapter VI addresses the environmental effects of implementing the flow alternatives of the Plan and discusses the potential impacts to agriculture in the land use sections of that chapter. The impact analysis acknowledges that, under some alternatives, implementation of the Plan objectives may result in reduced water deliveries in some areas. The analysis also points out that a reduction in water supply can lead to changes in land use, including shifts in crop types grown, short-term fallowing, or long-term retirement of agricultural land. However, the individual response to a reduction in water supply is generally subject to numerous options and decisions. Chapter XI (Economics) discusses the economic impacts of implementing the flow alternatives, including the impacts on agricultural water users.

The SWRCB recognizes the importance of agricultural land as a component of the environment and believes that the DEIR adequately addresses the potential impacts to it through the implementation of the 1995 Bay/Delta Plan.

Comment: [page 001] The DEIR describes major features of the environment in most of California, since most areas of California will be affected by this water right decision. This description is overly generalized and incomplete. (EBMUD)

Reply: The Environmental Setting chapter provides a description of the physical conditions that exist within the area which will be affected either directly of indirectly by the proposed project. The level of detail in this description is adequate for the environmental impact analysis.

Comment: [page 001] In its description of the environmental setting, the DEIR states" export areas include the San Francisco Bay Region, Tulare Lake Basin, Central Coast Region, and Southern California". The description of export areas should be modified to include the portion of the San Joaquin River Basin served by the Delta-Mendota Canal (including the Exchange Contractors' service area) because this area is served with Sacramento River Basin water exported by USBR from the Delta. (WWD)

Reply: Revision made to text to clarify this point.

Section A. CENTRAL VALLEY BASIN OVERVIEW

Comment: [page 002] Figure III-1,(Also III-2, III-3 and VIII-1) These maps incorrectly locate the Chowchilla River. They also seem to have labeled the Bear/Merced Creek as the Chowchilla River. We suggest that all maps show Fresno Slough as in Figure VIII-1, and that the Chowchilla and Eastside Bypasses be shown as well. (USDOI)

Reply: Revisions have been made to these figures.

Comment: [page 002] Figure III-1: Spelling of Kaweah River is not "Kawaeh". (DWR)

Reply: Revision has been made to the figure.

Comment: [page 003] Central Valley Basin Overview, Last Paragraph. The first two sentences should read: Developed water is used in the Central Valley basin primarily for growing crops, which in turn feeds many millions of people. Water is used to a lesser extent to meet urban, industrial, environmental and instream needs, and for other uses. (Gorrill)

Reply: It is implicit that the crops that are grown do feed many people, but many of the crops are used as feed for livestock or in the manufacturing of other products. The text will be revised to include environmental needs in the list of water uses.

Comment: [page 003] The general discussion in this overview section makes reference to the Central Valley Basin in a way that is confusing, if not inconsistent with applicable statutes mandating separate recognition of distinct watersheds, and counties of origin in each. The term "watershed" as used in the DEIR should be changed to achieve consistency with the Water Code Section 11460 reference to "watershed or area wherein water originates." (Shasta CWA)

Reply: The term "Central Valley Basin" may not necessarily match the statutory or legal definition of a basin. However, the Central Valley is a recognized geomorphic feature of the state and its importance in terms of the Environmental Setting for this EIR is that the surface water runoff from within this area drains to a common point, namely the Sacramento-San Joaquin Delta and San Francisco Bay; thus, it is often referred to as a basin. The text goes on to describe the hydrologic basins that are located within the Central Valley, but many of the physical features of these basins are common throughout the Central Valley and, therefore, are discussed collectively in the overview.

Comment: [page 005] The last sentence of the first full paragraph identifies there are overdraft conditions limited to a few localized areas within the Sacramento Valley. This comment is significant because the DEIR does not focus on the potential impacts of the surface water curtailments for these few localized areas or any other area in the Sacramento Valley. As indicated in our general comments, the DEIR does not analyze the potential impacts from increased groundwater pumping as a result of the surface water curtailments. (SVWU)

Reply: The DEIR does analyze the potential impacts from increased groundwater pumping as a result of the surface water curtailments. This issue is discussed in Chapter VI.

Section A.1.a. Surface Water Development, Central Valley Project

Comment: [page 005] The EIR should note that while New Melones Reservoir and Millerton Lake are physically south of the Delta, unlike San Luis Reservoir they are not hydrologically south of the Delta. (SEWD)

Reply: The point of the comment is not clear and the term 'hydrologically south of the Delta' is ambiguous. If the point of the comment is to distinguish that New Melones Reservoir and Millerton Lake store water on rivers that are tributary to the Delta and that San Luis Reservoir stores water exported from the Delta, then the text describing these facilities is clear and adequate.

Comment: [page 005] It is more accurate to say that the CVP is owned by the United States and operated by the USBR. (USDOI)

Reply: Revision made to text.

Comment: [page 006] Figure III-3 lists the Putah South Canal as a CVP canal. This is incorrect. The Solano Project, of which the Putah South Canal is a feature, is an USBR project but is not part of the CVP. (SCWA)

Reply: Figure III-3 has been revised as suggested.

Comment: [page 006] Figure III-3. This figure should include the Red Bluff Diversion Dam and Nimbus Dam. While Los Banos and Little Panoche Detention Dams have been included, they probably are not necessary. (USDOI)

Reply: Figure III-3 has been revised to include the Red Bluff Diversion Dam and Nimbus Dam.

Comment: [page 007] The City of Stockton should be included as an urban area receiving CVP water. (SEWD, Stockton)

Reply: Revision made to text as suggested.

Comment: [page 007] The DEIR fails to note that the Second Amended Contract for Exchange of Water has both annual and monthly limitations on the water to be provided by the United States to the Exchange Contractors thereunder, and that the annual amount of water to be provided is established based upon forecasted runoff on the Sacramento River into Shasta Reservoir rather than local conditions. (FWUA)

Reply: Text has been added accordingly.

Comment: [page 007] The DEIR should be clarified that the 3.1 million acre-feet of water right settlement water is not project water within the Sacramento Valley. (SVWU)

Reply: The statement referred to points out the distinction between project water contracts and settlement water contracts and refers to the CVP contracts throughout its service area. Subsequent discussion further describes the settlement contracts with the Sacramento River settlement contractors and the San Joaquin River Exchange Contractors.

Comment: [page 007] The DEIR states that Friant Dam allows the CVP to divert a major portion of the flow from the river. More correctly, Friant Dam allows CVP to divert substantially all of the flow of the river at that point. (SDWA)

Reply: The discussion of Friant Dam diversions, here, in the following sentences, and in subsequent sections, adequately describes the CVP operations for the environmental setting.

Comment: [page 007] "... long-standing historical rights" The Exchange Contractors have riparian and pre-1914 rights. It is not clear why a new category of "long-standing historical rights" should be established. (USDOI)

Reply: Revision made to text refers to riparian and pre-1914 rights.

Comment: [page 007] "... receive their supply from natural flow and storage regulated at Shasta Dam." should read "... receive their supply from natural flow, storage regulated at Shasta Dam, and Trinity Basin imports." (USDOI)

Reply: Revision made to text as suggested.

Comment: [page 007] The DEIR characterizes water supplied by USBR to water contractors as either project water, Friant Division Class II water, or water right settlement water. These classifications are inappropriate. Natural flows diverted by settlement contractors from the Sacramento River are not project water. However, to the extent USBR supplies water to Sacramento River settlement contractors in excess of their historic rights, these contractors are receiving project water. In addition, water used to provide Friant Division Class II supplies and water exported via the Delta-Mendota Canal for delivery to the Exchange Contractors is project water. (WWD)

Reply: The classifications of water supplied by USBR, as used in the text, is accepted terminology.

Comment: [page 009] Tables III-1 and III-2 include a column entitled "Average Deliveries" but do not describe the period used to calculate those average deliveries. Tables III-1 and III-2 do not show the units of the data displayed. (USDOI, GCID, SVWU, TCCA)

Reply: The period of record used to calculate average deliveries in Tables III-1 and III-2 is 1982 - 1989, excluding 1983 because it was an extremely wet year. The units of average delivery are acre-feet per year. The data used for these calculations were obtained from USBR and used to calculate inbasin obligations as described in Volume 2, Appendix 3 which presents the data used in the calculations for Delta outflow under Alternatives 3 and 4. The data are presented in the table 'Annual CVP Deliveries to Sacramento Valley Contractors (1982-1989)' beginning on page A3-18.

Tables III-1 and III-2 have been revised to indicate the units and to include a footnote describing the period used to calculate the estimates of average deliveries.

Comment: [page 009] Table III-1. It should be noted that the CVP contract with the Colusa Drain Mutual Water Company is a "replacement water contract," and no water is delivered directly to CDMWC by the CVP. This contract enables them to divert water from the Colusa Basin Drain when their rights are deficient. The CVP then makes up the impact of that diversion to downstream senior right holders. (USDOI)

Reply: A footnote has been added to Table III-1 to explain this point.

Comment: [page 009] The "River Mile" location identified in Table III-1 for GCID should be corrected to state "154.8R." (GCID-1)

Reply: Correction made to table.

Comment: [page 011] Fish and wildlife enhancement is not among the authorized purposes of use of water appropriated by USBR at Shasta or Folsom dams. Until the SWRCB acts on the petition to modify the permitted uses of water appropriated by the USBR at these dams, it is inappropriate to assume that the dams will be operated to maintain fish flows or regulate flows for fish and wildlife. (WWD)

Reply: Fish and wildlife enhancement is not an authorized purposes of use of water appropriated by the USBR at Shasta or Folsom dams. However, it is among the authorized purposes included in the legislation for the CVPIA, and the USBR has petitioned to add fish and wildlife as a purpose of use of its Shasta and Folsom permits. The CVP is currently operated to provide instream flow benefits within the terms of its authorized purpose of use. The chapter on the Environmental Setting provides a description of the existing physical conditions.

Comment: [page 011] The Sacramento River Division (page III-11 to III-12) should note that the Tehama-Colusa Canal supplements water supplies to the Sacramento National Wildlife Refuge, the Delevan National Wildlife Refuge and the Colusa National Wildlife Refuge, by "wheeling" water to Glenn-Colusa Irrigation District. It should also be noted that much of the irrigation runoff water is recycled in the Colusa Basin Drain and utilized by Colusa National Wildlife Refuge. An adequate supply of water delivered to the refuges is a requirement of the CVPIA, Section 3406 (d) (5). (TCCA)

Reply: Revision made to text as suggested.

Comment: [page 011] As part of the Sacramento River Division, it should be noted (page III-11 to III-12) that the Tehama-Colusa Canal construction is not 'complete' and has been given Congressional authorization for extension into Solano and Napa Counties (CVPIA, Title 34, Section 3412). (TCCA)

Reply: The text has been revised accordingly.

Comment: [page 011] The sentence on the temperature control device should read: "A temperature control device was recently installed on Shasta Dam which is intended to allow all releases at Shasta to pass through generation facilities when the system is being operated to meet a temperature standard for fishery enhancement/protection on the upper Sacramento River." (USDOI)

Reply: Revision made to text as suggested.

Comment: [page 011] Revise text to state that "Keswick Reservoir serves as an afterbay to regulate releases. . ." (USDOI)

Reply: Revision made to text as suggested.

Comment: [page 012] The DEIR should identify the capacity of the Delta Cross Channel and that it can divert a significant portion of the Sacramento River flow. (SVWU)

Reply: Revision made to text as suggested.

Comment: [page 012] Lake Natoma regulates the releases... (not re-regulates). (USDOI)

Reply: Revision made to text as suggested.

Comment: [page 012] The DEIR should be revised to indicate that the Los Vaqueros Project is in operation and to include CCWD's new water supply intake on Old River near Highway 4. Additionally, modeling analysis does not reflect the recent implementation of the Los Vaqueros intake at Old River by the Contra Costa Water District. The analysis should be revised utilizing a more appropriate compliance location along Old River. (CCWD, DWR, SWC, USDOI)

Reply: Chapter III (Environmental Setting) has been revised to include a description of Los Vaqueros Reservoir and the intake facility at Old River in the sections on surface water development in the Central Valley and on water supply in the San Francisco Bay region. Los Vaqueros Reservoir has been added to Table III-20 Major Reservoirs in the San Francisco Bay Region. Chapter XII has been revised to indicate that the Los Vaqueros Project has been completed and is in operation.

The modeling work for the DEIR took place considerably before implementation of the new intake. Therefore the modeling assumptions represented conditions at the time of DEIR issuance. Los Vaqueros Reservoir is included in the modeling of cumulative impacts.

The purpose of the current Bay/Delta proceeding is to implement the objectives in the 1995 Bay/Delta Plan, not to change them. The addition of a compliance point, or shifting compliance from one point to another, constitutes a change in the objectives and should be considered the during the next triennial review of objectives. It is not appropriate to analyze in this EIR changes which are not currently under consideration by the SWRCB.

Comment: [page 013] It is misleading to state that the CVP delivers water to the Mendota pool to replace the San Joaquin River's natural flow. Although the water actually enters part of the San Joaquin River, that water is delivered immediately to the Exchange Contractors and does not in any way replace the river's natural flow excepting as that would apply to those contractors. (SDWA)

Reply: This sentence has been edited and the reference to natural flow has been omitted.

Comment: [page 013] "... replace the river's natural flow which is diverted at Friant Dam" It should be noted that the inflow to Friant Dam is generally highly regulated by the extensive storage and generation system of PG&E and SCE. The water flowing above Millerton Lake therefore is not "natural flow" in the accepted meaning of the term. (USDOI)

Reply: This sentence has been edited and the reference to natural flow has been omitted.

Comment: [page 013] ". . . However, only a portion of the drain was constructed, terminating at Kesterson National Wildlife Refuge. The discovery of accumulations of selenium in the drainage water and sediments at Kesterson forced the closure of the refuge and the drain after 1985." The above information is incorrect. It should be stated that: "only a portion of the drain was constructed,

terminating at Kesterson Reservoir. Kesterson Reservoir was incorporated into Kesterson National Wildlife Refuge. The discovery of accumulations of selenium in the drainage water and sediments at Kesterson Reservoir forced the closure of the reservoir and the drain after 1985." (USDOI)

Reply: Revision made to text as suggested.

Comment: [page 013] Revise text to read "... CVP and Exchange Contractors on the west side of the San Joaquin Valley" (USDOI)

Reply: Revision made to text.

Comment: [page 013] The third paragraph on page III-13 contains a number of erroneous factual statements. This paragraph states, "CVP water conveyed through the Delta-Mendota Canal is released into the San Joaquin River Channel at the Mendota Pool to replace the river's natural flow which is diverted at Friant Dam to the Madera and Friant-Kern Canals." This statement implies that water is released into the Mendota Pool to provide flows for the San Joaquin River. This implication is wrong; water is conveyed to the Mendota Pool by the Delta-Mendota Canal because the Pool is identified as a point of delivery of CVP water to project contractors and the Exchange Contractors. The River is used as a conveyance only for water deliveries to San Luis Canal Company and only for a distance of a few miles. (WWD)

Reply: Revision made to text as suggested.

Comment: [page 013] Third paragraph: the Exchange Contractors are not on the east side of the San Joaquin Valley. To the contrary, Firebaugh Canal Water District, Central California Irrigation District, and San Luis Canal Company are entirely on the west side of the San Joaquin Valley trough. Only Columbia Canal Company is located adjacent to and east of the River. (WWD)

Reply: Revision made to text.

Comment: [page 014] "Additional water supplies are provided to the Friant-Kern Canal". It should be noted that such water supplies are not associated with the CVP and the CVP merely facilitates exchanges or wheeling for CVP contractors if such actions do not affect the ability of the CVP to deliver contractual supplies. (USDOI)

Reply: Revision made to text as suggested.

Comment: [page 014] Eastside Division. Please note that, ordinarily, the only facility that can contribute to flow and water quality requirements in the Sacramento-San Joaquin Delta is New Melones. Hidden and Buchanan reservoirs have hydraulic continuity with San Joaquin River and Delta only during flood conditions. (USDOI)

Reply: The hydraulic continuity between the Chowchilla and Fresno rivers and San Joaquin River has been reduced significantly due to diversions, but it would be possible for the facilities on these rivers to contribute to the flow requirements in the San Joaquin River. The text will be modified to

avoid the implication that they currently contribute to minimum flows and water quality requirements in the Sacramento-San Joaquin Delta.

Comment: [page 014] Friant Division. "Water supply is made available in part through an exchange agreement and from purchase of water rights." (USDOI)

Reply: Revision made to text as suggested.

Section A.1.b. Other Federal Projects

Comment: [page 015] Black Butte Reservoir is not part of the Orland Project. Black Butte is technically integrated with the CVP. The Orland Project is not part of the CVP. The operations of Black Butte Reservoir are coordinated with the Orland Project so as not to affect the rights of the Orland Project and to allow water rights to be developed on the Stony Creek watershed under the watershed protection statute principles with respect to the water rights at Black Butte Reservoir. (USDOI)

Reply: Revision made to text to reflect this distinction.

Comment: [page 015] It should be noted that the Army Corps of Engineers (USCOE) reservoirs on east-side tributaries to the Tulare Lake Basin do not have federally-held water rights associated with them. All water rights are held by local water users. (USDOI)

Reply: Revision made to text as suggested.

Section A.1.c. State Water Project

Comment: [page 015] The statement that Figure III-8 shows SWP deliveries from '67 to '96 is incorrect. This does not include deliveries in the Feather River basin including the water rights settlement agencies. (DWR)

Reply: Revision made to text and figure.

Comment: [page 016] The map incorrectly portrays location of South Bay Aqueduct facilities. Water for the South Bay Aqueduct is first pumped at Banks PP. (DWR)

Reply: Figure III-6 has been revised as suggested.

Comment: [page 017] Substitute the following sentence: Del Valle Reservoir provides 40,000 AF of storage capacity for water delivery and conservation. The Lake is designed for 77,000 AF storage, but all storage above 40 TAF is floodwater encroachment. (DWR)

Reply: Revision made to text as suggested.

Comment: [page 017] The second paragraph from the bottom states that water from the North Bay Aqueduct is used for agricultural and municipal use. North Bay Aqueduct water is only used for municipal use. (SCWA)

Reply: Revision made to text as suggested.

Comment: [page 019] Tudor Mutual Water Company has a SWP contract for 5,000 a.f. per annum, but is not listed as a Settlement Contractor in Table III-4 on page III-19. (CFWID)

Reply: Table III-4 has been revised to include Tudor Mutual Water Company as a SWP Settlement Contractor.

Comment: [page 020] Only two pumping plants (Dos Amigos and Buena Vista) are necessary to serve most of SWP's agricultural users. (96% of our aqueduct turnout capacity for San Joaquin valley agriculture lies upstream of the Buena Vista Pumping Plant.) (DWR)

Reply: Revision made to text as suggested.

Section A.1.e. Major Diversions

Comment: [page 021] Major Diversions. It should be noted that some of the major diverters listed in this section are covered by water right settlement contracts with the CVP or SWP. (USDOI)

Reply: The text in this section has been modified, as has Table III-6, to indicate that some of the major diverters are covered by water right settlement contracts with the CVP or SWP.

Comment: [page 022] Contra Costa Water District makes the point here, and elsewhere throughout the document, that the DEIR characterizes diversions to CCWD as exports from the Delta. CCWD makes arguments that the District as a whole should be considered an in-Delta water user that diverts water rather than exports water from the Delta, and suggests that the DEIR should acknowledge that the District is provided substantially the protections under the Delta Protection Act. (CCWD)

Reply: The 1995 Plan treats CCWD diversions as diversions from the Delta that affect the Net Delta Outflow Index. Consistent with the Plan, CCWD diversions are treated the same as exports in the DEIR because the water diverted by CCWD does not return to the Delta. This treatment is not intended to establish the legal status of CCWD's diversions.

CCWD is requesting the SWRCB to decide in the EIR a legal issue which is subject to multiple interpretation and controversy. The Contra Costa Canal was authorized and constructed as an integrated unit of the CVP and the rights for diversion into the canal are held by the USBR. Priorities among CVP contractors need not be determined for purposes of this analysis. If CCWD determines that it needs to make a case that it has protection under the Delta Protection Act, it should raise this issue in the Bay-Delta water right proceeding when relevant.

Comment: [page 022] For some reason, the Board and other reviewing agencies continues to try to overstate the effect of agricultural diversions in the South Delta. Very little if any data exists to show

that the Delta diversions have any significant effect on Delta channels or fishery populations. Such statements as contained on page 22 appear to be an attempt to de-emphasize the effects of the State and Federal export pumps which take huge numbers of fish and fundamentally alter the flows in the San Joaquin Delta. (SDWA)

Reply: The first sentence of the paragraph acknowledges that the USBR and DWR are the major diverters from the Delta. The statement regarding local diversions merely points out that, when taken collectively, the potential diversion capacity is substantial.

Comment: [page 022] The DEIR on page III-22 states that "The USBR exports water from the Delta at Tracy Pumping Plant and at Rock Slough." Similar references to CCWD as an exporter are given on page III-7, IV-7, and IV-16. Contra Costa Water District's entire service area is located within the "statutory Delta" defined in Water Code Sec. 12200 or "an area immediately adjacent thereto which can conveniently be served therefrom" (see for example, the watershed protection statute language on page II-17 of the DEIR). This latter distinction is used, for example, in the DEIR to continue to treat Madera Canal deliveries, deliveries to areas adjacent to Millerton Lake, and deliveries within the Kings River watershed as in-basin deliveries (Flow Alternative 4 on page II-18). Contra Costa Water District as a whole should, therefore, be considered an in-Delta water user that diverts water rather than exports water from the Delta, and the DEIR should acknowledge that the District is provided substantial these protections under the Delta Protection Act. (CCWD)

Reply: The 1995 Bay/Delta Plan includes diversions to the Contra Costa Canal in the calculation of Delta exports for the purpose of calculating the Net Delta Outflow Index (see page 25 of the 1995 Bay/Delta Plan). This is not intended to indicate the eligibility of CCWD's diversions for protection under provisions of the Water Code. See also response to CCWD comment for Chapter II.

Comment: [page 022] "...1,800 local diversions within the Delta, many of which are unregulated" It is not clear what is meant by the term "unregulated." (USDOI)

Reply: The term "unregulated" meant that many of these diversions are made under claim of riparian or pre-1914 right. The text has been revised to reflect this point.

Comment: [page 023] Table III-5 has a footnote stating "Status as an export project vs. an in basin project is a part of this proceeding". This refers to adoption of the assumptions in the flow alternatives that the supplies from the Friant Unit of the CVP be considered in or out of basin for purposes of this proceeding. It is not clear if this is a precedential issue that will be given adequate review and analysis in this proceeding. The DEIR does not adequately evaluate this issue from the public trust resource protection standpoint and we were not aware that the scope of the proceeding included this issue. Please clarify the intent of this footnote in Table III-5. If this issue is to be included in the scope of this proceeding it should be properly announced and adequate time allowed for preparation. (DFG)

Reply: The intent of the footnote on Table III-5 is to draw attention to the fact that the status of the Friant Unit as an in-basin or an export project has not yet been determined. Consequently, the DEIR models two different water right alternatives using both sets of assumptions.

Comment: [page 023] Table III-5 - Although the numbers in the table all add up to the totals in the respective permits, the way the table is structured and some of the permit components lumped together, it perpetuates some misunderstandings about DWR permits. For A14443, only 1360 cfs of the allowable direct diversion is out of the Feather, the remaining 6185 cfs is direct diversion at Banks. The allowable storage is 3,500,000 AF out of the Feather and 42,100 AF at Banks to DWR reservoirs south of the Delta. Any of the water permitted for diversion out of the Feather may also be taken directly at Banks without any initial diversions at Oroville. The permitted storage season for the Delta diversions is January through December. The water diverted to storage under A17512 may be diverted to any of DWR south of Delta facilities not just San Luis. Showing San Luis has led to the misconception by many that 1.1 MAF is the maximum we can store in San Luis in a single year. This is not the case. We can store any of the permitted storage quantities in San Luis. (DWR)

Reply: Your comment is noted. The table is essentially correct and was intended to simply illustrate the various water right permits that the SWP operates under. However, the table has been modified to separate the Oroville and Banks components under A14443. In addition, the following footnote has been included: "Any of the water permitted for diversion out of the Feather may also be taken directly at Banks without any initial diversions at Oroville. Any of the SWP's permitted storage quantities at Oroville or Banks may be stored or re-stored in San Luis. The DWR stores water diverted under A17512 at any of its south-of-Delta facilities."

Comment: [page 024] Table III-6 is incorrect or it is misleading because the addition of cumulative storage and direct diversion rights on an annual basis overstates the actual diversions made by some water right holders. (SJRG, SDWA, YCWA)

Reply: The table is correct, but it may be misleading. The list is a compilation of water right holders that have diversion rights with a cumulative face value of 40,000 acre-feet per year or more. It does not represent actual diversions by the water right holders and there may well be terms or conditions which limit actual diversions made under multiple permits to something less than the cumulative total of those permits. Table III-6 is not the basis for apportioning the responsibility for meeting the objectives of the 1995 Plan. There is, however, a certain illustrative value for comparing the cumulative face value of water rights held by various entities. The table will remain, however the title has been changed from 'Major Diverters' to 'Major Water Right Holders' and the text has been revised to clarify what information is presented in the table.

Comment: [page 024] The DEIR, at page III-24, adds confusion to its earlier reference to the "Central Valley Basin", by reference here to the "Central Valley Watershed." The DEIR should be clarified to indicate that both the San Joaquin and Sacramento Rivers are tributary to the Bay/Delta Estuary, but that the Central Valley is not otherwise a single hydrologically linked watershed. (Shasta CWA)

Reply: The title of Table III-6 has been revised to simply refer to the Central Valley. The discussion of the Central Valley Basin on page III-3 of the DEIR adequately describes the relationship of the Sacramento and San Joaquin rivers as tributaries to the Delta. Separate and detailed discussions of the Sacramento and San Joaquin river basins follow the discussion of the Central Valley Overview.

Comment: [page 025] Table III-6 - This Table lists the "major diverters in the Central Valley Watershed", which are defined as those having "a face value of or greater than 40,000 acre-feet." The data included for the Stanford Vina Ranch Irrigation Company is incorrect. (Page III-25.) This stems

in part from unintentional errors in the original Statements of Water Diversion and Use Nos. 729 and 730 filed by Stanford Vina in 1967. The capacity of the diversion works at the Main Diversion Dam (No. 729) and the Cone-Kimball Dam (No. 730) were stated incorrectly, probably due to a misunderstanding on the part of Stanford Vina regarding the unit of measure. The maximum capacity of the diversion works was overstated for the Main Dam and understated for the Cone-Kimball Dam. Further, the amounts reported by Stanford Vina for diversions at the Cone-Kimball Dam did not take into consideration that approximately 50% of the water diverted at that point has historically been, and continues to be, used by a downstream land owner under separate right. That water is not part of Stanford Vina's rights.

These errors were compounded by an additional error made by the SWRCB in the transference of the data from the original Statement Nos. 729 and 730 into its WRIMS Database. The WRIMS Database does not accurately reflect the capacities of the diversion works listed in the original Statements.

Had all of the amounts been properly stated in the original Statement Nos. 729 and 730 and properly entered into the WRIMS Database, the correct data for SVRIC would be as follows:

Cumulative Face Value 35,900 acre-feet
Cumulative Direct Diversion Rate: 85 cubic feet per second
Cumulative Storage: None

Therefore, SVRIC does not qualify for inclusion in Table III-6. We request that you remove SVRIC from Table III-6. (SVRC)

Reply: The data in Table III-6 is based on water right information on file with the SWRCB and, relative to that information, the table is correct. If Stanford Vina Ranch Company believes that the information contained in its Statements of Diversion and Use is incorrect, the Company should submit a revised statement to the SWRCB with the correct information. Table III-6 is not the basis for apportioning the responsibility for meeting the objectives of the 1995 Plan, but rather is included for illustrative purposes to demonstrate the relative magnitude of water rights and diversions in the Central Valley. The threshold of Cumulative Face Value used for inclusion in Table III-6 (40,000 AF) is somewhat arbitrary and even if the Company files a revised Statement of Diversion and Use, the fact remains that Stanford Vina Ranch Company diverts a substantial amount of water.

Comment: [page 025] Tuolumne Utilities District does not have a right to divert 80 cfs or a face value of 57,816 a.f. from tributaries to the Tuolumne River (as shown on page III-25). (CFWID)

Reply: Water right records indicate that Tuolumne Utilities District has three statements of diversion and use (S996, S1006, and S1007) for a cumulative direct diversion of 80 cfs from streams that are tributary to the Tuolumne River.

Section A.2. Aquatic Resources

Comment: [page 022] Aquatic Resources - Omitted from this section is the significant amount and value of wetlands-related aquatic resources, including those maintained by the Butte Sink Waterfowl Association and U.S. Fish and Wildlife Service in the Butte Sink. (BSWA)

Reply: The section heading 'Aquatic Resources' may be overly broad. The section describes the fishery resources in the Central Valley and includes a discussion of the life histories of selected fish

found there. This section is intended to avoid repetition in the subsequent regional discussions. Specific reference to the Butte Basin aquatic resources has been included in the Sacramento River Basin fish and recreation sections.

Comment: [page 026] The text regarding Central Valley fish habitats inaccurately generalizes the reasons for differences in productivity between Central Valley lakes and reservoirs, and appears to be an attempt to justify any adverse impacts that the DEIR alternatives may have on water supply reservoirs. (EBMUD)

Reply: The generalizations between productivity in lakes and reservoirs are accurate. The normal operation of the reservoirs would limit certain fish populations because of potential drawdowns and the minimal amounts of cover.

An additional statement is included to describe the benefits to downstream fisheries of coldwater storage at some of the reservoirs. Reservoirs may enhance downstream fisheries by controlling the temperature and timing of releases or mitigate impacts caused by the reservoir.

Comment: [page 026] The first sentence of paragraph 2 states that the implementation of the SWRCB's water rights decision "could affect" many of the Central Valley's fish species and communities. This seems understated because implementing the 1995 Bay/Delta Plan, which has been modified to better protect fishery resources, "would be intended to affect" those fishery resources. (DWR)

Reply: Comment noted.

Comment: [page 026] Third complete paragraph, 1st sentence: Change this sentence as follows: "Delta smelt, Sacramento splittail, and longfin smelt are species of special concern because of their declining numbers in the Delta and federal status as threatened (Delta smelt), proposed threatened (Sacramento splittail), and species of concern (longfin smelt) under the ESA." (USDOI)

Reply: Revision made to text. Revision refers to Sacramento splittail as a federally listed threatened species.

Section A.2.a. Chinook Salmon and Steelhead

Comment: [page 027] DFG biologists working on Deer and Mill Creeks reported that adult spring-run migration period is February through June. There is disagreement about the validity of extending the migration period from June through September. The reference to adult migration period should be re-examined. (DWR)

Reply: The Recovery Plan for the Sacramento/San Joaquin Delta Native Fish confirms the content of the paragraph. The sentences have been revised to clarify the entry and actual spawning periods of spring-run chinook salmon in the Sacramento River basin. In Deer and Mill Creeks, it appears that spawning migration is predominately from April through June with spawning occurring from late August through October.

Comment: [page 027] The statement that late-fall run chinook salmon wait 1-3 months before spawning should be re-examined. Late-fall run fish are typically in the most advanced reproductive state of all the races while they are migrating through the Delta, and may be older than 1-3 months. (DWR)

Reply: The statement has been revised and no longer states that adult late-fall run chinook salmon may wait 1-3 months before spawning.

Comment: [page 027] Presently, summer steelhead are found only in North Coast drainages but winter steelhead are found in the Sacramento River system, and the north, south and central coast drainages. (McEwan & Jackson 1996) (DWR)

Reply: This paragraph has been revised. All Central Valley steelhead stocks are winter-run steelhead. Adult migration in the Sacramento River occurs in most months. Entry into the Sacramento River begins in July and peaks near the end of September with continued migration through February or March.

Comment: [page 027] The statements about steelhead life history are over-simplified. Some in the Sacramento River apparently do not go out to sea at all any more. (SFPUC)

Reply: The text has been revised to address this concern.

Comment: [page 027] The distinction between fall-run and winter-run steelhead may not be valid; there do tend to be two peaks but there are fish moving upstream from late September through May. The statement about the timing of runs of steelhead in the San Joaquin River makes it sound as if there is no question steelhead still exist in the San Joaquin. With the possible exception of a run up the Stanislaus River (even here documentation is shaky), there is no evidence for steelhead runs in the San Joaquin basin at the present time. (SFPUC)

Reply: Revisions made to text. This paragraph has been revised to remove references to fall-run steelhead and to discuss the uncertainty of runs in the San Joaquin River.

Comment: [page 027] Late fall-run are through migrating by the end of March, not April as indicated. (SFPUC)

Reply: The Recovery Plan for the Sacramento/San Joaquin Delta Native Fish confirms the text. The sentences have been revised to say the migration occurs between October and March or April.

Section A.2.b. Striped Bass

Comment: [page 028] The description of striped bass not moving into the ocean as much is questionable. There is evidence that movement, especially of large females, into the ocean has increased in recent years (e.g., see reports by W.A. Bennett, including summary in IEP newsletter). (SFPUC)

Reply: Revision made to text.

Comment: [page 028] 2nd paragraph - We suggest adding the following sentence to the end of the paragraph: "However, data from Bennett and Howard (1997) suggests that many older bass move to the ocean during warm El Nino events (e.g. 1976 - 1977)." (DWR)

Reply: Revision made to text.

Section A.2.d. White and Green Sturgeon

Comment: [page 029] The evidence of sturgeon spawning in the San Joaquin River & tributaries in recent years is shaky at best. Except in wet years, adequate spawning habitat is probably rarely present. Lumping white and green sturgeon together is a mistake because they have very different behaviors. Inferring that what is good for green sturgeon on the basis of what is good for white sturgeon is not justified. (SFPUC)

Reply: The paragraph was revised to state that it is unknown if sturgeon still use historical spawning locations in the San Joaquin River. A separate discussion of green sturgeon life history has been added.

Section A.2.e. Delta Smelt

Comment: [page 030] Paragraph 4, change the second sentence to read: "...between 1982 and 1992 their abundance was relatively low in most years." The 1991 Fall Midwater Trawl Adult Abundance Index was actually pretty strong. The FEIR should mention that the 1993 and the 1995 indices were the 6th and 7th highest on record. (DWR)

Reply: The text has been revised to address this concern. The revised text states "While their annual abundance has fluctuated greatly in the past, between 1981 and 1990, abundance was consistently low. Indices in 1991, 1993, and 1995 were more than double those of the 81-90 period; indices in 1993 and 1995 were the 6th and 7th highest on record."

Comment: [page 030] The first complete paragraph on Page III-30 states that delta smelt spawn in the Mokelumne River. This is not an accurate statement. Delta smelt may spawn in Delta channels of the Mokelumne River but not in the riverine portion (29.6 miles) of the River (54 percent of the Mokelumne River below Camanche Dam lies in the Delta and is tidally influenced). (EBMUD)

Reply: Text has been revised to state "Delta channels of the Mokelumne River" rather than "the Mokelumne River system".

Comment: [page 030] 2nd paragraph - Change the last three sentences to read: "During the recent six-year drought the center of delta smelt abundance was the western Delta. However, during high outflows in water years 1993, 1995 and 1997 their distribution shifted into Suisun Bay and areas further downstream. Delta smelt are captured seasonally in the channels of Suisun Marsh." (DWR)

Reply: Revision made to text. Distribution data from 1998 were also added.

Comment: [page 030] The description of delta smelt distribution is a bit dated. Much has happened since 1993, e.g. they are not confined to the Sacramento River. (SFPUC)

Reply: The text has been revised to update their current distribution.

Comment: [page 030] No mention is made of the two important attributes of the delta smelt life cycle: they live only one year and have low fecundity. Since 1993, delta smelt numbers have been fairly low. The causes of decline listed are from a laundry list from the Delta Native Fishes Recovery Plan. We still do not actually know exactly what has caused their decline, so caution is needed in making statements. (SFPUC)

Reply: III-29 (paragraph 7) does note their short life span. It was revised to include their low fecundity. The reasons for decline are listed in III-30 (paragraph 4) as multiple and synergistic.

Comment: [page 030] Revise last complete sentence as follows: "The USFWS listed the Delta smelt as threatened on March 5, 1993 and issued a formal biological opinion for SWP and CVP operations on May 26, 1993." (USDOI)

Reply: Revision made to text. The date of listing in the Federal Register was March 3, 1993, but the effective date was April 5, 1993.

Comment: [page 031] 1st paragraph - Consider concluding this paragraph by mentioning that the SWP and CVP are now operated under the USFWS' 1995 Biological Opinion. (DWR)

Reply: The last sentence of the delta smelt section was revised to say " USFWS issued an amended biological opinion for SWP and CVP operations on February 4, 1994 and again on March 6, 1995."

Section A.2.f. Longfin Smelt

Comment: [page 031] Last paragraph - Add the following after the third sentence about longfin smelt: "Abundance has improved substantially during recent wet years." (DWR)

Reply: The second and third sentences of the paragraph have been replaced by "Their abundance has fluctuated widely in the past, but since 1982, abundance has declined significantly, reaching the lowest levels during drought years. Abundance improved substantially in 1995, but was again relatively low in 1996 and 1997." This information was obtained from the Spring 1998 Interagency Ecological Program Newsletter.

Section A.2.g. Sacramento Splittail

Comment: [page 032] 6th paragraph - Replace the entire paragraph with the following two paragraphs:
"The abundance of young splittail was significantly reduced during the recent six-year drought. Nonetheless, it is clear that the drought did not compromise the ability of the stock to rebound. Wet conditions in 1995 resulted in record indices for most of the measures of YOY abundance. This response is similar to other extreme wet years such as 1982, 1983 and 1986, which also produced

high indices. Initial indices for 1996 and 1997 (both wet years) also suggest improved abundance. In contrast to young splittail, adult abundance showed no obvious decline during the 1987-1992 drought. Adult population variation is moderated by the species' long-life span and multiple year classes.

Abundance of young splittail appears to be primarily related to flooding of terrestrial areas such as the Yolo Bypass, which provide spawning, rearing and foraging habitat. Other factors that may affect abundance include toxic substances, introduced species, predation and sport fishing. Salvage data since 1979 suggest that water project diversion losses have not had an important population level effect." (DWR)

Reply: The paragraph was revised to incorporate the information.

Comment: [page 032] Recent Interagency Ecological Program studies have concluded that the distribution of splittail is not all that different than historically. (Sommer et al. 1997) (DWR)

Reply: Revision made to text in paragraph 2. Sommer et al (1997) stated that the abundance of splittail is highly variable and the stock has ability to rebound, despite their reduced distribution. Other literature also indicates that splittail distribution has been reduced from their historic range. Revisions made to the text indicate current distribution of splittail.

Comment: [page 032] Splittail enter the San Joaquin basin annually to spawn along the valley floor river and sloughs. Based on larval/juvenile recoveries in Kodiak trawl surveys at Mossdale, the reproductive success varies significantly among years. The number of adults entering the river and the relative number of recruits per adult are unknown. Geographically the adults appear to remain along the mainstem and lower reaches of the tributaries in slow relatively warm turbid water. (DFG)

Reply: Comment noted. The majority of this information is already included in the text.

Comment: [page 032] Discussion of the "continuing decline" of splittail ignores the data from the last three years, that indicates splittail have had a very strong year class and have returned in high numbers. (SFPUC)

Reply: The text was revised to describe the current population trends. A revised paragraph addresses the indices fluctuations as identified in the Interagency Ecological Program Spring 1998 Newsletter and in the Splittail Abundance and Distribution Update, 1998, presented by DFG at the January 13, 1999 meeting of the CALFED Ops Group.

Comment: [page 032] Splittail are found in spring, mostly in wet years, up both the Sacramento and San Joaquin rivers. An important spawning area appears to be the Yolo Bypass. Consult Meng & Moyle (1996) for updated information. (SFPUC)

Reply: Revision made to text.

Comment: [page 032] 3rd paragraph - Change the first sentence about splittail to read: "...begin spawning at 2 years of age." The third sentence should read: "Adults spawn from February through

May in the Delta, upstream tributaries, Napa and Petaluma rivers and Suisun Bay and Marsh." (DWR)

Reply: Revision made to text.

Comment: [page 032] g. Sacramento Splittail. Add a sentence at the end of this section: "The Sacramento splittail was proposed as threatened by USFWS on January 6, 1994." (USDOI)

Reply: The following revision made to text: "The Sacramento splittail was listed as threatened by the USFWS on February 8, 1999."

Section A.2.h. White Catfish

Comment: [page 032] Very incomplete discussion of white catfish (see recent issue of California Fish & Game for updated information). Why discuss just this species and not brown bullhead and channel catfish, as well? The comment about eating the eggs of other fish is out of place; lots of fish eat the eggs of other fish & they are not particularly important to catfish. (SFPUC)

Reply: The brief discussion of white catfish is intended to be representative of many catfish species and is only included because of their importance as a sport fish. The comment about eating eggs of other fish has been removed.

Section A.2.i. Largemouth Bass

Comment: [page 033] The account of largemouth bass is general rather than being specific to the estuary, so is not very useful. There are other centrarchids that contribute to the fishery as well - why are they ignored? In fact, a more general question is why were so many other species, native and introduced, not mentioned? (SFPUC)

Reply: The description is intended to be generic to cover the whole project area (i.e. Sacramento /San Joaquin Delta Estuary watershed). Not all species could be addressed in the document. Representative species are used to streamline the discussion.

Section A.3. Recreation

Comment: [page 033] Recreation - This section accurately states that many outdoor recreational activities are water dependent or water enhanced. (Page III-34.) Hunting, at least waterfowl hunting, is not water enhanced, but water dependent. Absent an adequate water supply, the waterfowl populations cannot be sustained and hunting would be limited or eliminated. Hunting is a popular activity in the State of California and part of the public trust. (BSWA)

Reply: For purposes of the analysis of impacts to recreation (Chapter VI), hunting, as a type of recreation, is listed as water-enhanced because of the many species and settings that can be included in the affected area. Obviously, waterfowl hunting is more directly related to water supplies than big game hunting or even upland game hunting. However, waterfowl hunting, as a recreational activity,

is not as water-dependent as, say, boating, fishing and swimming. Geese, for example, are often hunted in dry grain fields.

Comment: [page 033] Recreation - There is no description of the importance of the Butte Sink or even its existence here or in the sections regarding surface water hydrology and other applicable topics. (BSWA)

Reply: The section referred to here is in the Central Valley Overview and is too broad for a specific reference to the Butte Sink. However, discussions of the Butte Basin have been added to the surface water hydrology, fish, and recreation sections for the Sacramento River Basin.

Comment: [page 034] Recreational facilities are also adversely impacted by extremely low reservoir levels. Boat ramps, mooring and marina facilities and services that are normally accessible by boats become inaccessible when reservoir levels drop. Severe drawdowns of EBMUD's Pardee and Camanche Reservoirs have occurred only occasionally in the past, and then only during naturally occurring drought periods. (EBMUD)

Reply: The recreation impact analysis in Chapter VI focuses on the change in opportunities for water related activities. Most of the critical thresholds that were used to identify recreation impacts are related to the effects of declining water levels on recreation facilities such as boat ramps and marinas. As the comment points out, the impact to the facilities is that they become inaccessible as reservoir water levels drop. The DEIR acknowledges that one of the potential impacts of adopting the flow alternatives is that reservoir levels may be drawn down sooner, lower, or for longer periods than under the base condition.

Comment: [page 034] Paragraphs 3 and 4, mischaracterize the tradeoffs in recreation benefits between storage reservoirs and their downstream riverine environments. It is not appropriate or accurate to compare the large variety and economic value of recreation at Central Valley Reservoirs, especially large, low elevation impoundments, to some minimal, potential increase in riverine recreation in low gradient rivers with slow meandering water. This is especially true for rivers that have limited public access. (EBMUD)

Reply: The statement regarding offsetting impacts has been deleted.

Section B. TRINITY RIVER BASIN

Comment: [page 036] Public Law 105-44, signed by President Clinton on September 30, 1997, officially changed the name of Clair Engle Lake to Trinity Lake. References to Clair Engle Lake in the text and on the maps should be modified accordingly. (Trinity Co., WWD)

Reply: Revision made to text and figures.

Comment: [page 037] In order to provide context for discussions about the Trinity River, the EIR should note that the Trinity River Flow Evaluation Study is required by a 1981 Interior Secretary's Decision and Section 3406(b)(23) of the CVPIA (P.L. 102575). It should also note that the 1955 Trinity River Act contains a "do no harm" clause that the Interior Secretary is "authorized and

directed to adopt appropriate measures to insure the preservation and propagation of fish and wildlife...". Furthermore, the EIR should note that the DOI has a trust obligation to the Hoopa Valley and Yurok tribes to protect their federally reserved fishing rights, which includes providing adequate streamflows to protect and restore Trinity River fish populations for tribal harvest. (Trinity Co.)

Reply: The discussion of the Trinity River has been revised to include the points made above.

Comment: [page 037] The EIR should note that Hayfork is also a population center in the Trinity River basin. It is actually the second largest community in Trinity County, second only to Weaverville. (Trinity Co.)

Reply: Revision made to text.

Comment: [page 037] The DEIR states that "the CVP uses Trinity River water to meet agricultural and urban water demand in the Sacramento and San Joaquin Valleys, (and more recently, the San Luis and San Felipe Divisions of the CVP), . ." This statement is misleading. Water deliveries to the San Luis Unit began in 1967, shortly after construction of the Trinity River Division was completed. Moreover, the San Luis Unit is in the San Joaquin Valley. Therefore, there is no basis to distinguish between deliveries of Trinity River water to areas served by the Delta-Mendota Canal and the San Luis Unit. (WWD)

Reply: Revision made to text.

Comment: [page 038] The discussions in Chapters III and XII concerning the Trinity River Flow Evaluation should be amended to reflect the recommendations contained in the Draft Final Report released in January 1998. (DWR, Trinity Co., WWD, DFG)

Reply: The discussions of the Trinity River Flow Evaluation in Chapters III and XII have been revised, as suggested, to recognize the recommendations contained in the Draft Final Report released in January 1998. The Draft Final Report recommends flows, based on water year type, which range from 368,621 acre feet to 815,226 acre feet per year.

Comment: [page 038] The EIR should note that while there are not any in-basin deliveries from the Trinity Division of the CVP, "Humboldt County and other downstream users" have an area of origin water right to 50,000 af which has never been delivered, but is likely to be requested in the near future. That right to 50,000 af is contained in the 1955 Trinity River Act, all Trinity River water permits issued to USBR, and there is a 1959 signed agreement between USBR and the Humboldt County Board of Supervisors for the 50,000 af. The EIR should address the likelihood of USBR being able to deliver the 50,000 af under each alternative and how delivery of that water would cumulatively impact recreation in Trinity Lake and the ability to meet Trinity River Temperature objectives contained in the North Coast Basin Plan, especially during multi-year drought conditions. (Trinity Co.)

Reply: The text has been revised to note Humboldt County and other downstream users' claim under area of origin water right to 50,000 acre-feet per year from the Trinity River. However, it is outside the scope of this EIR to address the likelihood of USBR being able to deliver that water.

Comment: [page 038] Although the draft EIS/EIR for the Trinity River Flow Evaluation Study was scheduled to be available for public review in 1997, it has yet to be released. (WWD)

Reply: The reference to the scheduled release of the Trinity River DEIR/EIS has been deleted.

Comment: [page 35] The EIR should note that the Trinity River Basin Fish and Wildlife Management Act of 1984 (P.L. 98-541, as amended) requires that the Interior Secretary restore Trinity River fish and wildlife populations to levels that existed prior to construction of the Trinity River Division of the CVP, with the Trinity River Hatchery mitigating for lost habitat upstream of Lewiston Dam, but the hatchery is not to interfere with natural production of fish below Lewiston Dam. (Trinity Co.)

Reply: Comment noted. Additional material on the Trinity Basin has been added to Chapter III.

Section C.1. SACRAMENTO RIVER BASIN, Geography and Climate

Comment: [page 040] Figure III-10, in referring to Shasta and Siskiyou counties, has transposed the names of these two counties. Shasta County, the southern most of these two counties, is fully within the identified "Sacramento River Region". (Shasta CWA)

Reply: Figure III-10 has been revised.

Section C.2. Population

Comment: [page 039] The DEIR describes significant population growth in the City of Sacramento, as well as other communities in the Sacramento River Region. Yet, there is no discussion of the impacts of waste discharges from the City of Sacramento. There are currently plans to expand the Sacramento Regional Wastewater Treatment Plant, and a revised DEIR (September 1997) for the master plan of the expansion is currently out for public review. This DEIR does not address the water quality impacts, which may occur due to the Sacramento Regional Wastewater Treatment Plant. This impact could be considered in the Cumulative Impacts section of the FEIR. (DWR)

Reply: This is outside of the scope of this EIR. The Cumulative Impact section addresses related (water supply) projects. Unless the discharge volume significantly affects river flows, this is not a cumulative impact of the project.

Section C.3. Land Use and Economy

Comment: [page 039] The DEIR should recognize the importance of CVP facilities and operations on the recreational economy and related land uses, at least in Shasta County. (Shasta CWA)

Reply: This point is adequately made in section A.3.

Comment: [page 041] Land Use and Economy (Sacramento River Region) - "While agriculture is the largest land use it does not provide the most jobs. The largest proportions of wage and salary jobs are in the service, wholesale, and retail trade, government and manufacturing sectors, respectively."

The implication is that agriculture is secondary to the economic picture of the Sacramento region. Government jobs predominate in Sacramento. Outside of that sphere, agriculture is the economic engine and offers much of the secondary habitat that supports endangered species. If the multiplier factor and support industries for agriculture were included in this analysis, service, wholesale and retail jobs would fade in significance. (VWPA)

Reply: The first sentence of the paragraph states that "the economy of the Sacramento River Basin is based primarily on irrigated agriculture and livestock production." The fact that there are more jobs in other sectors simply reflects the growth in the metropolitan area.

Comment: [page 041] First Paragraph, Last Sentence. "The largest of any single crop is rice, which represents about 23 percent of the total". This water usage may be increasing due to the phase down of burning, but such use benefits the migratory waterfowl. (Gorrill)

Reply: The statement in the text refers to the percentage of total irrigated acreage, not water usage.

Comment: [page 041] The second full paragraph on this page identifies the reduction in irrigation acreage within the Sacramento River region. The net decrease of 31,000 acres of irrigated crops between 1980 and 1990 results in a net reduction of consumptive use of water within the valley as compared to continued increases in export diversions. In addition to reduced irrigated acreage; improved water management, technological advances in agricultural crops, and improved farming practices have resulted in a reduction of consumptive use within the Sacramento Valley. These facts need to be considered when assigning responsibility for meeting the 1995 Plan requirements. (SVWU)

Reply: Comment noted.

Comment: [page 041] In the last paragraph under "Land Use and Economy" please include the city of Vacaville as a "major urban area". The population of Vacaville is approximately 80,000. (SCWA)

Reply: Revision made to text.

Comment: [page 041] "Agricultural acreage in the region peaked during the 1980s and has since declined. The main reason for this decline is the conversion of irrigated agricultural lands to urban development."

Crop statistics showing a decline in irrigated agricultural acreage during the 1980s reflect the drought conditions. There is no information presented to indicate that new housing covers the 31,000 acre reduction in irrigated acreage. This assumption of urban sprawl into agricultural lands assumes that communities do not implement known good land use planning strategies which are exemplified in General Plans such as the Butte County's Agricultural Element. (VWPA)

Reply: The conclusion that the reduction in agricultural acreage is due to conversion to urban development comes from DWR Bulletin 160-93.

Section C.4. Water Supply

Comment: [page 041] It should be made clear that there is a substantial net export of Sacramento River basin water to out-of-watershed import areas such as the San Joaquin Valley, far in excess of the nominal volumes which are imported. (Shasta CWA)

Reply: The next paragraph states that 0.88 MAF is diverted from the Trinity River, along with smaller diversions from Echo Lake, Sly Park Reservoir, and the Little Truckee River into the Sacramento River Basin, and that 6 MAF is exported from the Sacramento River. The fact that there is a net export from the basin should be clear.

Comment: [page 041] If the Sacramento River Basin average annual water supply of 11.7 MAF (page III-41) is the 1990 level annual net water use (as indicated on page III-47), the annual acre feet for this region is misrepresented. 1990 was a drought year, the CVP contractors were curtailed to 50% of their entitled contract amount. This should be changed to a year that reflects more accurately the net water use, such as 1995. (TCCA)

Reply: The 1990 level annual net water use figures, as reported in DWR Bulletin 160-93, are estimates of the 1990 level of development which were "normalized" based on the average of 1980-1987 use. The "normalization" for the 1990 level was achieved by using water use data not affected by the 1987-1992 drought. Please see DWR Bulletin 160-93 for further explanation of this methodology.

Section C.4.b. Surface Water Quality

Comment: [page 045] Surface Water Quality - "irrigation return flow all contribute a significant waste load to the Sacramento River." Rice, a predominant irrigated crop in the region, has shown to have controlled 99% of all pollutants in return flow. The inclusion of agriculture as a major contributor does not reflect current information. (VWPA)

Reply: While improvements have been made in controlling the pollutants associated with rice, agriculture remains one of the largest contributors of seasonal discharges to the Sacramento River, with pesticides being one of the pollutants of greatest concern.

Comment: [page 045] In the discussion on the Sacramento River Basin, there is reference to only three waste discharges into the Sacramento River. These are discharges from the cities of Redding, Red Bluff, and Chico (III-45). Based on information from a report entitled Sanitary Survey of the SWP, which was published in 1990 by Brown and Caldwell on behalf of the State Water Contractors, there are 15 major waste water treatment plants which discharge into the Sacramento River watershed. A list of these wastewater treatment plants is provided in the included table. These wastewater treatment plants may also have impacts on dissolved oxygen and electrical conductivity. (DWR)

Reply: Obviously there are more waste discharges into the Sacramento River than the three listed in this discussion. Reference to waste discharges into the Sacramento River below Chico were inadvertently omitted. The list of dischargers provided by DWR could be added as a table, but it does not appear to be inclusive. Instead, the text has been amended to indicate that other waste discharges also exist, including many suggested by DWR in its table.

Comment: [page 046] The DEIR refers to poor water quality in the Sutter Bypass and Colusa Basin Drain. The DEIR should note these are man-made channels, and that the water is reused by the water right holders. (SVWU)

Reply: The point of the discussion in this section is that these channels are tributary to the Sacramento River and that they contribute to the degradation of water quality in the Sacramento River due to various discharges. The fact that they are man-made channels or that the water in them is reused by water right holders is not germane to this discussion. These points, however, are made elsewhere.

Comment: [page 046] The DEIR identifies agricultural drainage as the major source of "waste water" in the Sacramento River. The use of the term "waste water" is inappropriate and should be deleted. (SVWU)

Reply: Revision made to text as suggested.

Section C.4.c. Ground Water Hydrology

Comment: [page 046] "The main area of land subsidence is between the towns of Davis and Zamora in the southwestern part of the basin." Little is known about the aquifer. Though subsidence has been noted in the Davis Zamora area, it cannot be concluded that there are no risks for subsidence elsewhere. There has been no monitoring for subsidence through past water bank pumping projects. Until the Drought Water Bank sale activity, 40 % of all Butte Basin agricultural water was provided by pre-1914 surface water hence there has been little pressure on the aquifer. Wells are typically not cased beyond the minimum thus providing conductivity between strata. It cannot be concluded that there is no significant confining layer. We anticipate conditions noted on page III 75&76 if out-of-basin conjunctive use water sales are imbedded in the preferred alternative. (VWPA)

Reply: Chapter III does not evaluate the risks for subsidence in the Sacramento Valley. That analysis is included in Chapter VI, section C.11. Please see that section for the evaluation of the subsidence risks associated with the various flow alternatives. However, pursuant to your comment, the text in Chapter III will be edited to read "The main area 'where' land subsidence 'has been documented' is . . . . . Similarly, the text will be modified to say "the aquifer system is unconfined to semi-confined with no extensive confining layers 'identified' in the subsurface. Finally, out-of-basin conjunctive use water sales are not a component of any of the flow alternatives.

Comment: [page 046] "Depth to the base of fresh water ranges from 1,000 feet in the Orland area to 3,000 feet in the Sacramento area." Comments on the fresh water basin on the Orland / Sacramento area do not reflect the east side aquifer in the Nelson Richvale area (a conjunctive use planning area with much shallower available fresh water system). The fresh water ranges east of the Sacramento River are from 600 to 1200 feet. (VWPA)

Reply: Comment noted. Thank you for the additional information regarding the Nelson Richvale area.

Section C.4.d. Ground Water Quality

Comment: [page 047] Water quality constituents such as nitrates, arsenic, and salts have shown up in wells and are a concern to Butte County well owners. (VWPA)

Reply: Your comment is noted and the text points out that there are areas with localized nitrate and TDS problems. It is also true that, in some parts of the Sacramento Valley, elevated levels of naturally occurring elements, including arsenic and boron, make groundwater use problematic.

Section C.5. Water Use

Comment: [page 047] There is no reference as to the source of the water use information. (SVWU)

Reply: The source of the water use information is DWR Bulletin 160-93, The California Water Plan Update (DWR 1994). The reference is found in the introduction to the chapter on page III-1.

Comment: [page 047] The agricultural "net water demand (6.8 MAF)" indicated on page III-47 differs from the "average annual applied water demand for agricultural use ...over 7.8 MAF" as stated on page III-48. If there is a difference in "net water demand" and "applied water demand," please explain what it is and how the difference was determined. (TCCA)

Reply: The source of the information on water supply and use is DWR Bulletin 160-93. It defines "applied water" as the amount of water from any source needed to meet the demand of the user. For agriculture, it is the quantity of water delivered at the farm headgate. "Net water demand" is defined as the amount of water needed to meet all requirements. It is the sum of ETAW, irrecoverable losses, and return flow which leaves the area. Please refer to DWR Bulletin 160-93 for further details.

Comment: [page 048] The point that basin-wide efficiency in the Sacramento Valley is high due to the re-use of water should be emphasized. Less diversions through curtailments to water right holders would reduce water supplies to those who reuse water from the drains and rely on this tailwater as a primary source of water. (SVWU, TCCA)

Reply: The point that basin-wide efficiency in the Sacramento Valley is high due to the re-use of water has been adequately made. The impacts to water supply are addressed in Chapter V.

Delta Flow Alternatives 3 and 4 result in curtailment of diversions by water right holders listed in Table II-5. In modeling these alternatives, assumptions relating to the Sacramento Valley water right holders were as follows: 1) all senior water right holders who currently have contracts with the U.S. Bureau of Reclamation, or the DWR, will become inbasin obligations for the projects when their rights are curtailed. Water to meet their demands would come from project storage releases. 2) water right holders without contracts would seek a contract with the projects, or use an alternate supply such as groundwater. If the water right holders whose diversions are curtailed choose to fallow their land, and if the downstream water right holders reliant upon return flows are located on a drainage facility such as the Colusa Basin Drain, then there could be a reduced water supply available to those users.

Section C.6. Vegetation

Comment: [page 050] It is unclear whether Sacramento River Region is equivalent to Sacramento River Basin. These terms appear to be used interchangeably, yet most of the plants included in Table III-8 are plants found at low elevations. The table does not match all the habitats mentioned in the text on pages III-48 and III-49, nor the map on page III-40. (USDOI)

Reply: The discrepancy in the terminology results from the different sources of information used in the chapter. The affected area is essentially that portion of the Sacramento River Basin below the rim reservoirs. However, to provide a more complete description of the environmental setting, a broader discussion of certain regional aspects of the environment (such as geography, climate and surface water hydrology) were included as they are relevant to water supply. The text has been revised to consistently refer to the Sacramento River Basin.

Comment: [page 050] Table III-8 is incomplete. The following federally listed plant species should be included in the table:

Loch Lomond coyote-thistle, Eryngium constancei, endangered (E)
few-flowered navarretia, Navarretia leucocephala ssp. pauciflora,(E)
many-flowered navarretia, Navarretia leucocephala ssp. plieantha,(E)
Lake County stonecrop, Parvisedum leiocarpum,(E)
Stebbin's morning-glory, Calystegia stebbinsii,(E)
Pine Hill ceanothus, Ceanothus roderickii,(E)
Pine Hill flannelbush, Fremontodendron californicum ssp. decumbens,(E)
El Dorado bedstraw, Galium californicum ssp. sierrae,(E)
Layne's butterweed, Senecio layneae, threatened (USDOI)

Reply: Table III-8 has been revised to include the additional plant species.

Section C.7. Fish

Comment: [page 051] The statement that Sacramento perch still persist in the Sacramento River may not be accurate. Moyle (1976) and Moyle et al (1995) report that Sacramento perch no longer exist within the Sacramento River but have been introduced into reservoirs and lakes (DWR)

Reply: Sacramento perch are thought to have been extirpated from the Sacramento River. Sacramento perch have been removed from Table III-10. Revision made to text.

Comment: [page 051] Table III-10: Sacramento spring-run chinook salmon should be denoted as a candidate for listing as endangered under the CESA. (Also Table III-17 on Page III-101 and Table III-21 on Page III-117). Table III-14 on Page III-80 lists the spring-run salmon in the San Joaquin basin; although a major population historically, the spring-run salmon is extirpated in the San Joaquin Basin. (DFG)

Reply: Revisions made to text and tables noting current status of sensitive fish species.

Comment: [page 051] Table III-10. The Service recommends that steelhead, currently listed as a threatened species under the Federal Endangered Species Act (ESA), and fall-run and late fall-run chinook salmon and green sturgeon be added to this list of Sacramento River Basin sensitive fish species. Refer to the "Delta Native Fishes Recovery Plan" or Moyle, et al's "Fish Species of Special Concern in California" when assembling a list of sensitive fish species. Each of the fish species included in this sensitive fish species table should also be included in Table III-9 for fish species found in the Sacramento River and tributaries. (USDOI)

Reply: Revisions have been made to Table III-11 (formerly Table III-10) to update the list of species and status of sensitive fish species. These species were not added to Table III-10 (formerly Table III-9), because this table was intended to include only the common fish species found in the Sacramento River basin, not all species. This table has been retitled to more accurately reflect its contents.

Section C.7.a. Upper Sacramento River Region

Comment: [page 052] Upper Sacramento Region. In July 1991, a train derailed. During the clean up a hole was punctured in the tanker car, it was torn open and a toxic spill occurred. It was not a boxcar. (Gorrill)

Reply: Revision made to text as suggested.

Section C.7.b. Lower Sacramento River Region

Comment: [page 052] Last paragraph - The reference to "interim bypass operation" should be modified. The temperature control structure is in place and was operating through the summer. (DWR)

Reply: Revision made to text.

Comment: [page 053] Second paragraph, fourth sentence: The Service questions listing Sacramento splittail as a "coldwater game fish." Splittail tolerate much warmer temperatures than do rainbow and brown trout (their cohorts in the "coldwater game fish" category) and are not normally considered game fish. These categories contribute little to the DEIR, and should be dropped. (USDOI)

Reply: Revision made to text.

Comment: [page 053] The DEIR misrepresents the present day condition of the anadromous fishery in Butte Creek and fails to mention the ongoing restoration work. Suggested text is provided. (BSWA)

Reply: The information in the DEIR paragraph on Butte Creek fisheries is out of date. The discussion of fisheries in the lower Sacramento River and its tributaries has been revised with text added to describe the restoration work being done for anadromous fish in the system, including that for Butte Creek.

Section C.7.d. Yuba River

Comment: [page 054] Third full paragraph, first sentence: The USFWS questions the conclusion that fall-run chinook salmon are the most "important" anadromous fish in the Yuba River. Abundance and importance should not be seen as synonymous. The DEIR should be revised to clarify this issue. Further, the Yuba River supports a self-sustaining population of steelhead and is essentially the only wild steelhead fishery remaining in the Central Valley as documented in the DFG's February 1996 report, "Steelhead Restoration And Management Plan For California." The USFWS recommends that steelhead be included in the Yuba River discussion. (USDOI)

Reply: Revision made to text. The following paragraph is included in the text. "The Yuba River supports one of the only remaining self-sustaining populations of steelhead in the Central Valley. Up to 217,378 yearling steelhead were stocked annually from the Coleman National Fish hatchery between 1970 and 1979. It is unknown whether the present stock is of native origin or derived from Coleman fish. It is currently managed as a self-sustaining population."

Comment: [page 054] The DEIR should indicate here that the SWRCB has held a hearing on the Yuba River and heard testimony from the DFG and others regarding the stream flow and fishery needs in the Yuba River but has made no decision to date. The DFG believes there is insufficient information to support the statement that the Yuba River spring-run disappeared by 1959. The reference for this statement should be provided. (DFG)

Reply: The following revisions were made to the text. "The SWRCB held hearings to address flow and fishery needs of the Yuba River. However, no decision has been made to date. A draft decision was issued by the SWRCB in 1999."

The original spring-run population had virtually disappeared from the Yuba River by 1959, as documented in the DFG report "Status of Actions to Restore Central Valley Spring Run Chinook Salmon" (February 1, 1996).

Comment: [page 054] Fourth full paragraph, first sentence: The statement that "The original spring-run population had disappeared from the Yuba River by 1959" is not consistent with a similarly worded, but decidedly different statement, in the DFG report "Status of Actions to Restore Central Valley Spring Run Chinook Salmon" (February 1, 1996). CDFG's report reads "...virtually disappeared" rather than "...disappeared" and throughout their discussion leaves open the possibility that some or all of the spring run population presently in the river may be endemic. The Service recommends that the DEIR be revised consistent with CDFG's report. (USDOI)

Reply: Revision made to text.

Section C.7.e. American River

Comment: [page 055] Second full paragraph, second sentence, (d): The Service questions the statement that "...about 60 percent (of chinook salmon escaping to the American River from 1969 to 1981) were produced from salmon spawning naturally in the river and 40 percent from hatcheries." Such statements have been made in the past, but have not stood up to scrutiny. Others have proposed different ratios, but the data are insufficient to support any specific ratio. The DEIR should reflect

that there is not a good estimate of the ratio, but future fractional marking of hatchery fish should help refine the estimate. (USDOI)

Reply: Revision made to text.

Comment: [page 055] First full paragraph: To say that aquatic habitat in the American River "...includes a meandering streambed in a broad floodplain isolated from surrounding urban areas by 30-foot levees" appears to be a contradictory statement. It is our understanding that the current configuration of levees through most of the lower American River allows very little meandering of the streambed. Without the levees, the American River, as it approaches the Sacramento River, would likely meander in a more classical manner. We acknowledge that some meandering occurs at low flows, but at high flows it continues to be constrained by the levees. The DEIR should revise the statement to avoid any misunderstanding. (USDOI)

Reply: Revisions made to the text. The revised sentence states "The lower American River flows within a restricted channel isolated from surrounding urban areas by 30-foot levees".

Section C.8. Wildlife

Comment: [page 055] It should be noted that the current State-legislated winter rice field flooding (Rice Straw Burning Reduction Act of 1991) has created a new winter habitat used by millions of waterfowl who travel the Pacific Flyway (page III-55 to III-56) and that any decrease in water supplies will impact that habitat. (SCBLOC, TCCA)

Reply: The fact that the Rice Straw Burning Reduction Act of 1991 has created additional winter habitat used by waterfowl traveling the Pacific Flyway is noteworthy and the text of Chapter III has been revised to include this information. The analysis of impacts to water supply and habitat is considered in subsequent chapters. However, water for winter rice field flooding is generally diverted in the fall months (when Term 91 is not in effect) and thus is not likely to be affected by the implementation of the Bay/Delta Plan.

Section C.9. Recreation

Comment: [page 056] Shasta Lake is properly referred to in the DEIR as a "key lake and reservoir". This is true of both Whiskeytown Lake and Shasta Lake, from water supply, environmental and recreational standpoints, and the DEIR should make clear their multiple-faceted value. (Shasta CWA)

Reply: Discussions of Shasta and Whiskeytown lakes are included in the Central Valley Overview and in the Sacramento River Basin sections and adequately describe the multiple uses of these facilities.

Comment: [page 056] The DEIR should acknowledge that water based recreation is a non-consumptive beneficial use. The DEIR does not identify or evaluate the impact to recreational resources as a result of curtailing the water supplies which maintain waterfowl habitat. (BSWA)

Reply: Text has been added to section III.A.3 Recreation that points out that most recreational activities do not consume significant amounts of water. However, a DWR study to evaluate fall and

winter water use in the Sacramento Valley estimated that the consumptive use of water for flooded rice lands was over 40 percent of the applied water requirements. (DWR Bulletin 160-98)

Only two water rights could be identified within the Butte sink on Table II-5 of the EIR (A012437 and A014316) which would be effected by Flow Alternatives 3 and 4, and are not otherwise protected under the CVPIA. These rights have a cumulative direct diversion rate of 7 cfs, occurring from May 1 to September 1. As these rights have irrigation as their sole purpose of use, they can have a depletionary effect on Delta inflow. Their curtailment would not have the region-wide impact implied by the commentor. Text has been added to Chapter VI to address the potential impacts to vegetation, wildlife and recreation.

Section C.9.a. Reservoirs

Comment: [page 058] The DEIR reference to 7.3 million visitor days in 1992 understates the recreational value of Shasta Lake. (Shasta CWA)

Reply: The DEIR contains substantial discussion of the recreational value of Shasta Lake on pages III-57 to III-59. The reference to 7.3 million visitor days in 1992 is accurate.

Comment: [page 059] Shasta Lake recreational activity is less a function of facility access and more a function of perceived recreational quality. There is a direct relationship between visitor days and lake levels despite the availability of lake access. (Shasta CWA)

Reply: The text has been revised to state that "most water-dependent activities 'remain available' as the lake levels fall." A discussion of the economic impacts related to changes in reservoir levels has been added to Chapter XI.

Comment: [page 061] Recreation - "Visitation at the Lake Oroville Complex totaled approximately 600,000 visitor days in 1992." This reflects the lack of facility development required in the original project for County income. The newly initiated work to rectify this default will increase recreational use significantly. It is anticipated that this lake will fulfill the recreational industry promised in the 1960's. The recreational projections must be adjusted to reflect current and anticipated uses. (VWPA)

Reply: The DEIR does not include any projections of future recreational use.

Comment: [page 062] "Recreation activities at the Thermalito Forebay and Afterbay are not directly affected by water level fluctuations because surface water elevations at these control reservoirs are generally maintained at constant levels." This is not the case for the Afterbay. The levels fluctuate and those levels create hazards for boating activities. (VWPA)

Reply: The fluctuations in water levels at Thermalito Forebay and Afterbay are relatively minor, they are a function of the normal operations of the Feather River Project, and they would not, in any way, be affected by the implementation of the Bay/Delta Plan.

Section C.9.b. Rivers

Comment: [page 066] Lake Red Bluff on the Sacramento River should be mentioned for its recreational activities on page III-66. The community of Red Bluff receives and relies on the economic benefit resulting from the months the Lake is formed during the summer. (TCCA)

Reply: Lake Red Bluff is mentioned in the opening paragraph of section C9. Recreation. The page referred to in the comment describes the recreational resources on the rivers in the region. The previous section describes the recreational resources at the key reservoirs in the region. Lake Red Bluff was not listed as a key reservoir in the analysis of recreation impacts. The operation of the Red Bluff Diversion Dam would not be affected by the implementation of the 1995 Bay/Delta Plan.

Comment: [page 068] Under the discussion of the Bear River, the last statement of the paragraph indicates that the river is dry for most of the summer below Camp Far West Reservoir. The DEIR provides no support for this statement. According to the review of the US Geological Survey gage records for the Bear River near Wheatland during the recent drought (1990, 1991, 1992 and 1994), there were no periods of zero flow at this gage site. This gage is located approximately 6.5 miles downstream of Camp Far West Reservoir and 11 miles upstream from the confluence with the Feather River. Therefore, based on the US Geological Survey gage records, the statement contained in the DEIR is in error. (SVWU)

Reply: The statement is in error and has been deleted.

Section D.1. SAN JOAQUIN RIVER BASIN, Geography and Climate

Comment: [page 070] Figure III-11 - The map of the San Joaquin River Region has Camanche Lake misspelled. Also Stanislaus is misspelled near Stan/Merced County Line. (DWR)

Reply: Figure III-11 has been corrected.

Section D.4.a. Water Supply, Surface Water and Hydrology

Comment: [page 072] Figure III-11: A description of the Eastside and Chowchilla Bypass system and the operation that occurs in association with large runoff years should be included for the San Joaquin Basin. This should describe the "dry sections" of San Joaquin River under average hydrology. (DFG)

Reply: A discussion of the Eastside and Chowchilla Bypass system has been added to the section on the San Joaquin River Basin surface water hydrology.

Comment: [page 072] Surface Water Hydrology. It should be noted that prior to construction of Friant Dam, there was no flow in the San Joaquin River below Sack Dam on numerous occasions. (USDOI)

Reply: Revision made to text to clarify this point.

Comment: [page 072] Surface Water Hydrology. The Chowchilla and Fresno Rivers are not major tributaries to the San Joaquin. These rivers have foothill watersheds, not mountain watersheds. Their flow is predominately based on rainfall, not snowpack. (USDOI)

Reply: Revision made to text to clarify this point.

Comment: [page 073] The statement in the third line setting forth average annual export diversions should be expanded to confirm that no exports are authorized from the Stanislaus River. (SEWD)

Reply: The sentence in question has been revised to refer to diversions that are 'directly' exported from the Tuolumne and Mokelumne rivers.

Comment: [page 073] 2nd paragraph - This paragraph cites some principal dams on tributary streams. On the Mokelumne, only Pardee is cited, although Camanche stores significantly more water. It would be helpful if the text described the basis for selecting the dams that were worthy of being mentioned. (DWR)

Reply: Text has been modified to include Camanche Dam.

Comment: [page 073] As a further example of the flawed information in the DEIR, the DEIR appears to continue to use over-generalized statements concerning San Joaquin River tributary conditions. The DEIR specifically states that "[a]t times, no flows may also occur below diversion points on the larger streams." (DEIR at III-73.) This statement definitely does not apply to the Tuolumne River, particularly in the wake of the revised FERC-required flows which are elsewhere recognized in the DEIR. (SFPUC)

Reply: The statement is incorrect and it has been deleted from the text.

Comment: [page 073] Some of the referenced west side streams have good quality water. It isn't true that water from all of them (i.e. Los Banos Creek) is often highly mineralized. In addition, the amount of flow in a number of these is highly important as a source of recharge to groundwater in local areas. (SJRECWA-1A)

Reply: Revision made to text to clarify this point.

Section D.4.b. Surface Water Quality

Comment: [page 073] The document states that the major water quality problems for the San Joaquin River are due to large salt loads. Again, SDWA believes this is incorrect. Salt loads are not an issue rather concentrations are. In times of high outflows due to storm events, salt loads can be tremendous due to the buildup of salts in the soils but present no problem for beneficial uses given the large amount of dilution transporting those loads. SDWA will present as part of its testimony information regarding the salt accumulation in the Valley and its transport down the San Joaquin River. We would again like to stress that loads are not the issue. It should also be noted that the water quality problems on the San Joaquin River are exacerbated when combined with the low flows caused by the CVP as well as the effects of the export pumps in the Delta. (SDWA)

Reply: Salt loads are a problem principally under low-flow conditions when adequate dilution water is not available. Text has been revised to reflect the comment.

Comment: [page 073] It should be noted that the dissolved oxygen problems on the Stanislaus River have been corrected through removal and treatment of the point source wastewater and the contribution of flows from New Melones when required to maintain the dissolved oxygen standard. (USDOI)

Reply: Revision made to text to clarify this point.

Comment: [page 074] It is incorrectly noted that poor water quality is a result (in part) of diversions at Friant Dam. Diversions at Friant Dam do not affect the water quality of the lower San Joaquin River. The diversions lessen the ability of the lower San Joaquin River to assimilate poor quality discharges downstream from Friant Dam, but the diversions, in and of themselves, do not degrade water quality. There are no poor quality return flows that emanate from the Friant Division. (FWUA)

Reply: Revisions made to text accordingly.

Comment: [page 075] On page III-75, it is stated that "The Tuolumne River has a unique water quality problem in that saline water from abandoned gas wells increase the salt concentration in the river to about four times that of similar adjacent rivers." This statement is no longer true. The Tuolumne River gas wells were capped in 1979 using monies from the Cleanup and Abatement Account. (CVRWQCB)

Reply: The statement has been deleted and revisions made to text.

Section D.4.c. Groundwater Hydrology

Comment: [page 075] The major sources of recharge to the lower aquifer on the west side of the valley weren't discussed. Groundwater inflow from the east, from what has traditionally been referred to as the "forebay" area, is significant. Also, downward leakage of groundwater from the upper aquifer is important. (SJRECWA-1A)

Reply: The text has been revised to indicate that recharge to the confined aquifer occurs wherever the clay layer is absent. The text points out that recharge occurs from the upper aquifer through unsealed well borings in the overlying confining clay layers.

Section D.5. Water Use

Comment: [page 077] The DEIR states that the region's [Mokelumne, Merced, Stanislaus and Tuolumne rivers] annual water requirement for instream flows is 331,000 acre-feet. (DEIR at III-77.) This statement is in error, since the Tuolumne River alone has an annual flow requirement of over 300,000 acre-feet in normal years. (SFPUC)

Reply: Instream flow requirements for the San Joaquin River Basin have changed since the source document (DWR Bulletin 160-93) was published. The recently released California Water Plan

Update, DWR Bulletin 160-98, indicates that the instream flow requirement for the San Joaquin River Basin is now 1,169,000 acre-feet. The text has been revised accordingly.

Comment: [page 077] The sentence that: "The region's annual water requirement for instream flows is 331,000 acre-feet" must be explained. From where are these numbers derived? What does the phrase "requirement" mean in this context? (SEWD)

Reply: As indicated at the beginning of the chapter, information on water use is derived from DWR Bulletin 160-93. The document defines "Environmental Instream Flow" as the water maintained in a stream or river for instream beneficial uses such as fisheries, wildlife, aesthetics, recreation, and navigation. The instream needs are based on existing water right permits, court decisions, congressional directives, laws or agreements between government agencies and project operators. Please see DWR Bulletin 160-93 for further details. In response to a related comment, the text has been revised to indicate that the instream flow requirement for the San Joaquin River basin is 1,169,000 acre-feet, as reported in the recently released DWR Bulletin 160-98.

Section D.6. Vegetation

Comment: [page 079] Table III-13. Sensitive Plant Species in the San Joaquin River Basin: Please add the diamond petaled poppy (Eschscholzia rhombipetala) to the list of sensitive plant species found in the San Joaquin River Basin. It was thought to be extinct until 1997 when a single population was found at the Lawrence Livermore National Laboratory in Alameda County. (USDOI)

Reply: Revision made to table as suggested.

Section D.7. Fish

Comment: [page 078] San Joaquin River Basin, Fish: This section on the fishery resources of the San Joaquin basin is deficient in its detail. Eight short paragraphs cover the topic and are followed by ten pages on recreation; in some cases recreation is discussed at reservoirs for which the river or its fishery resources are not even mentioned. (DFG)

Reply: This section describing fishery resources of the San Joaquin basin has been expanded.

Comment: [page 078] This paragraph reflects a gross oversimplification of the situation. There is actually some pretty good habitat in the lower reaches of the Merced, Tuolumne and Stanislaus rivers, that contain native fishes. I assume by "basin" the authors mean the valley floor, which is not the usual meaning of basin. On the valley floor, there are virtually no native fishes. (SFPUC)

Reply: This section describing the fishery resources of the San Joaquin River basin has been revised and expanded.

Comment: [page 079] All the fish mentioned are non-native fish. The rivers also support a variety of native fishes such as hardhead, squawfish, riffle sculpin, etc. (SFPUC)

Reply: Native fish have been added to the text in an expanded section describing the fishery resources of the San Joaquin River basin. Table III-15 lists the sensitive species in the San Joaquin River, which are all native.

Comment: [page 080] SDWA questions the statement regarding CVPIA being likely to propose minimum flows on the San Joaquin River. Such a statement seems to imply that there will be a net benefit to all beneficial uses due to that project as well as this Plan. However, absent some substantial decrease in consumption upstream, it is impossible to increase flows at all times of the year on the San Joaquin River. There is no "extra" water which could provide increases at all times of the year, and so whether or not minimum stream flows are set, the net result will be decreased flows at one time if there are increased flows at some other time. (SDWA)

Reply: The revised Draft Restoration Plan for the AFRP (May 30, 1997) does not propose new minimum flow requirements for the San Joaquin River. This section has been revised accordingly.

Comment: [page 080] The statement is made in the last paragraph beginning on this page that "The USBR is to provide these interim flows." Please provide further information substantiating the language in the delta smelt biological opinion requiring the USBR to provide the flows. (SEWD)

Reply: The language is found on p. 17 of the Biological Opinion, under the Principles for Agreement and included as (c) of the water quality standards and operational constraints (San Joaquin River protection measures).

Comment: [page 080] Fish: In addition to the temporary approach to establish in-stream flow improvements, more traditional Federal Energy Regulatory Commission (FERC) re-licensing and water right processes are also underway or planned. (DFG)

Reply: Revisions made to text.

Comment: [page 080] The Tuolumne agreement should be mentioned here. (SFPUC)

Reply: This section has been revised and expanded to include references to current flow agreements.

Comment: [page 080] Last paragraph: The Fish and Wildlife Service's Biological Opinion applies to operations of both the CVP and the SWP. (DFG)

Reply: Revision made to text.

Comment: [page 080] Table III-14. Hardhead, Mylopharodon conocephalus, is also a species of special concern. Spring-run chinook salmon have been extirpated from the drainage. Fall run chinook salmon should be listed as a species of special concern. Steelhead are questionable as a population, although there are a few individual records (SFPUC)

Reply: Revisions made to table.

Comment: [page 080] In the discussion of the delta smelt biological opinion, the proper references to the CVP and SWP need to be made. (USDOI)

Reply: Revision made to text.

Comment: [page 080] Second full paragraph, last sentence states that: "...the AFRP, under which the Service will produce a final plan that will likely propose minimum flows as a necessary element of the achievement of the goal of doubling anadromous fish populations in the Central Valley." The statement is inaccurate. It should be noted that the USFWS proposed flows for only CVP-controlled streams in the 1997 Revised Draft Restoration Plan for the AFRP. It did not propose minimum flows in non-CVP streams. Also, the AFRP goal is to make all reasonable efforts to at least double natural production of anadromous fish. (See the Restoration Plan for a more complete statement of this goal). The Service recommends that the above sentence in the DEIR be revised consistent with the above information. (USDOI)

Reply: Revision made to text.

Comment: [page 080] The third paragraph is confusing. . . . What is the December 1994 Water Agreement? It is not defined anywhere in the EIR. (SJRG)

Reply: The December 1994 Water Agreement referred to the "Principles for Agreement on Bay/Delta Standards between the State of California and the Federal Government" which was signed on December 15, 1994. The text has been revised and this reference has been deleted.

Comment: [page 080] The third paragraph is confusing. No new minimum flow requirements have been proposed for the Tuolumne River or the Merced River. In fact, the final AFRP report recommends the FERC flows for the Tuolumne River. (SJRG)

Reply: The information in this paragraph is out of date. The revised Draft Restoration Plan for the AFRP (May 30, 1997) does not propose new minimum flow requirements for the Tuolumne or Merced rivers. This section has been revised.

Section D.8. Wildlife

Comment: [page 082] Table III-15, Sensitive Wildlife Species in the San Joaquin River Basin: Add the following bat species: Small-footed myotis (Myotis ciliolabrum), Long-eared myotis (Myotis evotis), Long-legged myotis (Myotis volans), and Yuma myotis (Myotis yumanensis). Additionally, the scientific name of the Townsend's big-eared bat has changed: Corynorhinus (formerly Plecotus townsendii). California greater mastiff bat is Eumops perotis ssp. californicus. Also, it should be noted that both the riparian woodrat and riparian brush rabbit have been proposed as federally listed endangered species. (USDOI)

Reply: Revisions have been made to Table III-15 accordingly.

Comment: [page 082] Table III-15 - The California mastiff bat genus Eumops is misspelled. (DWR)

Reply: Table III-15 has been corrected.

Comment: [page 083] 1st full paragraph - The Grasslands Water District no longer accepts tile drainage flows in the Grasslands area for wetland use. Since passage of the CVPIA, water for these wetlands has been made available from the Delta Mendota Canal or tailwater supplies. Selenium remains a concern, because the Grasslands area has significant residues of selenium from local tributary streams, soils, and accumulated loads from past use of tile drain water. (DWR)

Reply: Text has been revised accordingly.

Comment: [page 83] Chapter VIII discusses at length the problems associated with discharges of agricultural drainage into sloughs and ultimately the San Joaquin river. However, nowhere in that chapter is recognition found that "drainage flows are an appreciable percentage of the water supply for this area [the trough of the San Joaquin Valley between Mendota and Gustine] and are used to grow feed and cover crops, and to provide resting ponds for the waterfowl using this area." (See Chapter III, p. 83) Thus, on the one hand (Chapter VIII), we find criticism of drainage from the service area, while, on the other hand (Chapter III), we find reference to positive uses for drainage flows. (BWGWD)

Reply: The statement in Chapter III acknowledging the use of drainage water is not intended to imply that its use has no detrimental effects.

Section D.9. Recreation

Comment: [page 083] Section 9 of this chapter discusses recreation at reservoirs in the San Joaquin River Region. Recreation will be an important component at the District's new 100,000 acre-foot Los Vaqueros reservoir. Reservoir filling has begun and it is anticipated that the reservoir will be filled in 1999. Recreational opportunities will likely include fishing, picnicking, hiking, and wildlife viewing. The recreational impacts of the alternatives in the EIR should include potential impacts to recreation at Los Vaqueros reservoir. (CCWD)

Reply: Chapter III discusses the existing physical conditions. The recreation facilities and opportunities planned for Los Vaqueros Reservoir were not well defined when the DEIR was prepared. The recreation impacts of the flow alternatives are discussed in Chapter VI; however, the recreation impacts at Los Vaqueros Reservoir were not included because the critical thresholds at which certain uses are impaired were not defined.

Comment: [page 083] Upland game hunting is a popular sport along valley rivers, at reservoirs and on farm lands. (DFG)

Reply: The text has been revised to reflect the fact that upland game hunting is popular and occurs in the affected area. This revision was made in sections III.A.3 Central Valley Overview - Recreation, III.C.9 Sacramento River Basin - Recreation, and III.D.9 San Joaquin River Basin - Recreation.

Section D.9.a. Reservoirs

Comment: [page 084] The Millerton Lake fishery does not "consist mainly of trout." It is a warm water fishery which includes a popular inland striped bass program along with spotted and largemouth bass. It is a popular lake for bass tournaments. (DFG)

Reply: Revision made to text.

Comment: [page 086] The section on New Melones Reservoir and Lake McClure needs to be enhanced to include the problems associated with maintenance of cold water pools and management of cold water downstream in the designated salmon spawning reaches on the Stanislaus and Merced rivers. (DFG)

Reply: This section discusses the recreational benefits of these reservoirs. A discussion of the management of the cold water pool for downstream fisheries is not relevant to this section.

Comment: [page 088] Recreation at O'Neill Forebay also includes a large number of windsurfers. DWR tries to maintain high water surface elevations as operational needs allow to provide a safer windsurfing area. (DWR)

Reply: Revision made to text accordingly.

Section D.9.b. Rivers

Comment: [page 090] San Joaquin River - The text states there are no major public recreation facilities on the river's upstream reaches. This information appears outdated. Recreational areas on the San Joaquin River below Friant Dam have been expanding in recent years. The text should reflect creation of the San Joaquin River Conservancy, a State-established regional land conservancy, and recent parkway developments in the Fresno area, such as Lost Lake Park, and the Lewis Moran Bicycle Trail; public land acquisitions such as Rank Island, recreational facilities near Mendota and planned parkway development near Firebaugh should also be included. (DWR)

Reply: Revision made to text accordingly.

Comment: [page 091] The description of the lower Mokelumne River, paragraphs 4 and 5 on Page III-91, is characterized incorrectly. The lower Mokelumne River from Camanche Dam to the Delta is 29.6 miles, not 40 miles, as stated in the DEIR. American shad are not found in the riverine portion of the Mokelumne River. (EBMUD)

Reply: Revision made to text.

Comment: [page 091] Canoeing is very popular on the San Joaquin tributaries. (DFG)

Reply: Revision made to text.

Section D.9.c. Conveyance Facilities

Comment: [page 092] 2nd paragraph, last 2 sentences - Modify this section to reflect that there are 11 fishing access sites along the California Aqueduct. Bikeway mileage should be modified to 97 miles. (DWR)

Reply: Revision made to text as suggested.

Section E.1. SACRAMENTO-SAN JOAQUIN DELTA, Geography and Climate

Comment: [page 093] The document incorrectly states that almost all of the Delta lies below sea level and that islands have subsided over the years due to the oxidation of peat soils. Most of the South Delta is above sea level and there are only small areas of peat soil in the South Delta. The document's description more accurately describes the Central Delta. (SDWA)

Reply: Revision made to text.

Section E.2. Population

Comment: [page 093] The DEIR states that Antioch and Pittsburg, among other towns, are small cities located within the Delta. While it is true that Antioch and Pittsburg are located within the Delta, the recent growth of those cities would no longer classify them as "small". The current population estimate for Antioch is 78,000, while Pittsburg's population is estimated at 51,000. In the last 10 years Antioch's population has increased by more than 50%, and this trend is likely to continue. (CCWD)

Reply: The classification as "small" cities is used in contrast to the nearby cities of Stockton and Sacramento and the recent growth of these communities is noted in the text. However, the text has been modified at your suggestion and the term "small" has been removed.

Section E.4.a. Water Supply, Surface Water Hydrology

Comment: [page 096] The DEIR refers to the tidal flow at Chipps Island as being approximately 170,000. We assume this is 170,000 cfs, and the DEIR should be corrected to state this. (SVWU)

Reply: The flow units are cfs. Revision made to text.

Comment: [page 096] Does page III-96 refer only to South Delta or to the entire Delta? The document states that the local users in the South Delta withdraw 10 percent of Delta flow in normal years whereas 30 percent is withdrawn for exports. Is this correct? (SDWA)

Reply: The discussion on p. III-96 refers to the relative use of water as a percentage of total Delta inflow. As to the accuracy of the relative percentages, the source of this information is DWR Bulletin 160-93.

The text does not make mention of "the South Delta" as the comment indicates. The confusion here may stem from the previous paragraph, which describes the operation of the Delta Cross Channel and

the routing of Sacramento River water through the Delta to the San Joaquin River and other channels which are located in the southern Delta.

The paragraph on the relative use of the Delta inflow was inadvertently repeated in the subsequent section on water use. The paragraph will be deleted from the section on surface water hydrology.

Section E.4.b. Surface Water Quality

Comment: [page 097] Reduced tidal exchange should be added to the discussion of Surface Water Quality. (DFG)

Reply: Additional text has been included which discusses reduced tidal exchange, as suggested.

Comment: [page 097] This page would appear to be a good place to point out that even in wet years, sections of Old River experience water quality problems. (SDWA)

Reply: The text has been revised to include a discussion of the water quality problems associated with null zones in the Delta. This discussion also appears in Chapter 9 in both the DEIR and the FEIR.

Comment: [page 098] Fourth Paragraph - Bromides from the ocean have and will intermix with Delta water at the western edge of Sherman Island with or without reverse flows, especially if the Delta outflow is very low. The sentence "When bromides are present in water along with organic THM precursors, THMs are formed that contain bromide as well as chlorine" is also incorrect. As noted in the first sentence of this paragraph, THMs only form when the water is treated. (CCWD)

Reply: Revision made to text accordingly.

Comment: [page 098] In the discussion on human health concerns for Delta water as a drinking water source (III-98), the only disinfection by-products mentioned are Trihalomethane. Another human health concern that should be discussed is the formation of bromate in the finished drinking water when ozonation is used for disinfection of Delta water. Bromate formation occurs due to the higher bromide concentrations commonly found in Delta water. (DWR)

Reply: Revision made to text as suggested.

Section E.7. Fish

Comment: [page 100] Aquatic habitat in the Delta is poorly described. We dispute the apparent conclusion in the second sentence that "the amounts of various habitat types depend, in part, upon outflow regimes and water year hydrology." This statement takes a very narrow view of what constitutes habitat. It ignores channel morphology, structure, cover and that many of the characteristics of the various habitat types are predominantly tidally influenced. (SVWU, SFPUC)

Reply: The description of aquatic habitat has been revised as follows: "The Delta provides habitat for a wide variety of freshwater, estuarine, and marine fish species. Channels in the Delta range from

dead-end sloughs to deep, open-water areas and include flooded islands that provide submerged vegetative shelter. The banks of the channels are varied and include riprap, tules, emergent marshes, and native riparian vegetation. Water temperatures generally reflect ambient air temperatures; however, riverine shading may moderate summer temperatures in localized areas."

Comment: [page 100] The direct and indirect effects of the SWP and CVP pumps on fish populations are not adequately described. The export pumps are not identified as the primary cause of declining fisheries. (SVWU, SDWA)

Reply: Chapter III has been revised to reference the more detailed discussion that appears in Chapter VI. The extent to which reverse flows affect aquatic organisms is unknown. It is thought that the effects can be significant depending on operations. The extent to which exports and reverse flow are responsible for fishery declines is unknown; there is no consensus that the export pumps are the primary cause of fishery declines. Major factors affecting fish in the Delta other than CVP and SWP operations are identified in Chapter III as part of the general description of current status of factors affecting fish resources in the Delta. This discussion is not intended to analyze the relative impact of all limiting factors. Analyses of the impacts of project alternatives are presented in Chapter VI.

Comment: [page 100] The Aquatic Resources section of Chapter III is concise, well written and mostly accurate. "delta smelt" is the scientifically accurate spelling, not "Delta smelt". (DWR)

Reply: Revision made to text.

Comment: [page 100] Sacramento perch are not present in the Delta. (SFPUC)

Reply: Revision made to text.

Comment: [page 101] Table III-17. Sensitive Fish Species in the Sacramento-San Joaquin Delta, Sacramento perch: It should be noted that the Sacramento perch has been extirpated from the Delta. It still exists, however, in scattered ponds throughout the Central Valley. (USDOI)

Reply: Revision made to text and table as suggested.

Comment: [page 101] Table III-17. Sacramento perch are not present. Add: green sturgeon, longfin smelt, steelhead, San Joaquin fall run chinook, and late-fall run chinook, all species of special concern. (SFPUC)

Reply: Revisions made to table.

Section E.9. Recreation

Comment: [page 103] Sport fishing for striped bass and sturgeon in the Delta also occurs on charter boats. (DFG)

Reply: Revision made to text as suggested.

Section F.1. SUISUN MARSH, Land Use

Comment: [page 104] Section F1, Land Use - To make it more precise, we recommend this section be modified to read. "The portion of Suisun Marsh within the Suisun Resource Conservation District boundaries includes 52,000 acres of diked, managed wetlands; 6,300 acres of relict tidal marsh; 29,300 acres of bays and sloughs; and 27,000 acres of grasslands including vernal pools and other natural seasonal wetlands. These acreage figures do not include the diked and tidal wetlands adjacent to the Contra Costa shoreline, which are part of the Suisun Ecosystem and under the influence of regulatory objectives reviewed in the DEIR. The diked managed wetlands within Suisun include 153 privately owned managed wetlands. The DFG manages 15,000 acres of land, which includes diked wetlands, tidal marsh, and uplands. Concord Naval Weapons Station owns channel islands (Seal Island, Roe Island, Ryer Island, Snag Island, and Freeman Island) which are undiked tidal marsh set aside as wildlife sanctuary which support a variety of listed species." (DWR)

Reply: Revision made to text as suggested.

Comment: [page 104] Section F - The introduction paragraph should be modified to give the latest information about the Suisun Marsh. We suggest that the 2nd paragraph under Section F2 (Vegetation) be revised and moved to become the second paragraph in the introduction of Section F. A suggestion for the text of the new paragraph follows:

"Under the 1984 Plan of Protection for the Suisun Marsh and the 1987 Suisun Marsh Preservation Agreement to mitigate the effects of upstream water projects on the managed wetlands in Suisun Marsh, the staged construction of extensive water control facilities was planned. To date, the Initial Facilities (Roaring River Distribution System, Morrow Island Distribution System, and Goodyear Slough Outfall), and the Salinity Control Gates on Montezuma Slough have been constructed. These facilities help to ensure that a dependable supply of suitable salinity water is available to preserve managed wetland habitat including food plants for waterfowl." (DWR)

Reply: Revision made to text as suggested.

Section F.2. Vegetation

Comment: [page 104] Section F.2., Vegetation & page VII-49, Section 4 - These sections discuss vegetation occurring within the Marsh and impacts to vegetation associated with salinity. These sections should include the following information. Vegetation pattern correlates to salinity regime along the estuarine salinity gradient of the San Francisco Estuary on the broadest landscape scale. The functional role of salinity as a causative agent for the distribution and abundance of plant species may differ between and within marshlands and salinity has not been identified as a direct causative factor of plant distribution. Early observational studies conducted on waterfowl food plants within Suisun Marsh by the DFG some 25 to 30 years ago were not comprehensive in their treatment of this issue, and were not designed to determine causative mechanisms. Modern scientific studies of wetland plant ecology confirm that the duration of saturation and anaerobic soil conditions often controls the distribution and occurrence of marsh plants. Competition and positive biotic interactions have been found to determine marsh plant zonation patterns. A growing body of scientific literature suggests salinity is often not the controlling factor in brackish and salt marsh community structure. Observations within Suisun tidal marshlands confirm that the structure of these plant communities is not as strongly correlated to salinity regime as was once thought. (Refer to the Suisun Ecological

Workgroup Interim Report to the SWRCB, September 1997: SEW Brackish Marsh Vegetation Subcommittee Report (IV 1 - 24) for more detail.) (DWR)

Reply: The text in section III.F.2. - Vegetation has been revised and includes the following statements:

(1) Recent studies of wetland plant ecology confirm that the duration of saturation and anaerobic soil conditions often controls the distribution and occurrence of marsh plants.

(2) Within the diked wetlands, hydroperiod and management strategies are manipulated to maximize the production of plants which have traditionally been considered important for wintering waterfowl, including alkali bulrush, fat hen, and brass buttons.

Comment: [page 104] Section F.2. (Vegetation) - The paragraph on vegetation appears outdated. We believe that a list of endangered and candidate species should be provided similar to Table III-18 for Delta wildlife species. (DWR)

Reply: The text has been modified to include the special status and sensitive plant species found in Suisun Marsh, as well as a reference to Table VII-11 which presents further information on the special status and sensitive plant and wildlife species found in Suisun Marsh.

Comment: [page 104] 1st paragraph, lines 6-7 - While soil salinity does influence seed germination and ultimately seed production, there is no evidence to substantiate the claim that channel salinity is directly correlated to soil salinity in managed wetlands of Suisun Marsh. Years of monitoring within Suisun Marsh managed wetlands show that water management is the single most important factor in soil salinity management. Nearly all holophytic plants known to brackish marshes and coastal salt marshes subject to near seawater salinity require soil profile freshening to germinate. There is no evidence to substantiate the need for sustained low salinity periods for this germination to occur. A single rainfall event or even coastal fog drip often provides the freshwater input to trigger germination. Controlled, scientific experiments to determine the germination and growth requirements of plants native to Suisun Marsh have not been conducted to date. (DWR)

Reply: The issues raised by this comment are considered in detail in Chapter VII. The text in III.F.2. and III.F.3. has been revised as suggested in other comments by DWR.

Comment: [page 104] There is no mention of rare plant species in these sections. Suisun Marsh supports two endangered plant species (soft haired bird's beak and Suisun thistle) which are both endemic to Suisun Marsh, the rare Mason's lilaeopsis, and several species of concern considered to be in decline due to habitat fragmentation and fill (Delta tule pea, Suisun aster, and Contra Costa goldfields). We suggest information about these plants be included in the FEIR. (DWR)

Reply: The text has been revised and will include the following statement:

Suisun Marsh supports two endangered plant species (soft haired bird's beak and Suisun thistle) which are both endemic to Suisun Marsh, the rare Mason's lilaeopsis, and several species of concern considered to be in decline due to habitat fragmentation and fill (Delta tule pea, Suisun aster, and Contra Costa goldfields).

The text will refer to Table VII-11 Special Status and Sensitive Plant and Wildlife Species in Suisun Marsh.

Comment: [page 104] Section F: A table of the sensitive species that occur in Suisun Marsh should be included in section F. Besides the species included in paragraph three, the sensitive plant species listed in Table VII-11 also should be mentioned in Section F. (USDOI)

Reply: A reference to the table of special status and sensitive plant and wildlife species that occur in Suisun Marsh (Table VII-11) has been added to the text in this section.

Section F.3. Wildlife and Fish

Comment: [page 104] The DEIR states that Suisun Marsh supports 45 species of mammals, 230 species of birds, and 15 species of reptiles, but it does not mention the number of fish species. We suggest that the DEIR also state that the Suisun Marsh also supports 51 fish species (Matern et al 1996). (DWR)

Reply: Revision made to text as suggested.

Comment: [page 106] We suggest you include delta smelt, longfin smelt, and splittail as fish species found in the Marsh. These species are present in Suisun Marsh and were noted as important on III-26. In addition to being an important nursery area for striped bass, Suisun Marsh is used by delta smelt, longfin smelt, and splittail larvae (DWR 1997). (DWR)

Reply: Revision made to text

Delta smelt, Sacramento splittail and longfin smelt are important native fish found in the marsh.

Comment: [page 106] Section F.3., 7th sentence - Revise sentence to read: "Freshwater flows from the Delta and tributary creeks into Suisun Bay..." (DWR)

Reply: Revision made to text as suggested.

Comment: [page 106] Section F.3., 6th sentence - Revise sentence to read: "...which is affected by salinity of applied water and land management." (DWR)

Reply: Revision made to text as suggested.

Comment: [page 106] Section F.3., 1st paragraph - The reference to "natural food plants" is misleading. The early studies by the DFG which identified alkali bulrush, fat hen, and brass buttons as the most valuable waterfowl food plants in Suisun were based on food habit studies that are now considered out-dated. The details of this fact are reported later in this DEIR (p. VII-4). Alkali bulrush seed production requirements are the basis for the salinity objectives in Suisun. The life history strategy of this plant does not require or even favor seed production for reproduction, as the primary reproduction of the species is vegetative spread of rhizomes. Alkali bulrush is not a

dominant or co-dominant species in any natural tidal marsh of Suisun Marsh. The historic and modern importance of alkali bulrush to waterfowl in the Suisun tidal basin is unknown. Fat hen is a facultative wetland plant and its importance as a waterfowl food plant within Suisun is questionable. Brass buttons is an introduced non-native species from South Africa, which should not be considered a keystone species in a Suisun Marsh ecosystem management strategy. The need for a re-evaluation of salinity objectives for the Suisun Marsh by the Suisun Ecological Workgroup was in part promulgated by a concern for the historic single resource (waterfowl) approach and because of the need to review the early studies, which established the original D-1485 objectives. (DWR)

Reply: The text in this section has been revised as suggested in other comments. The issues raised by this comment are considered in detail in Chapter VII.

Comment: [page 106] Section F.3., 6th sentence - Remove the word "proper." (DWR)

Reply: Revision made to text as suggested.

Section G.3. SAN FRANCISCO BAY REGION, Land Use and Economy

Comment: [page 108] The DEIR states that Silicon Valley is the "world leader" in technology development and production. The DEIR also notes that the San Francisco Bay region is home to the "world-famous" Napa Valley and Sonoma Valley wine industry and that San Francisco Bay is one of "the world's favorite recreational boating areas." These descriptive terms are in contrast to the description of agriculture in the San Joaquin River region, as to which none of the many deserved superlatives are applied. Agriculture in the San Joaquin Valley is a "world leader" in diversity, production, farming techniques and water conservation. It is "world famous" for its extraordinary crops, often providing the world's sole source of a number of commodities, and it is quite simply the premiere agricultural region in the world. The omission of flattering adjectives as applied to the San Joaquin Valley suggests a bias against the region on the part of the authors of the Draft EIS which undermines its conclusions. (FWUA)

Reply: The descriptive terms used in the discussion of the San Francisco Bay Region were carried forward from the source information. They are not, however, important to the discussion and the text has been revised to eliminate them.

Section G.4.d. Water Supply, Ground Water Quality

Comment: [page 113] The second paragraph discusses groundwater quality in the Solano County area. The last sentence states that "The Putah Plain aquifer is distant from municipal and industrial water demand centers, so water transport facilities would have to be incorporated into any project developing groundwater on a major scale". This is not necessarily true. The city of Vacaville overlies the Putah Plain and pumps a significant portion of its water supply from deep wells in the aquifer. The deeper Tehama formations generally provide a higher water quality than the overlying Putah Plain aquifer. (SCWA)

Reply: The statement referred to is neither accurate nor relevant to the discussion of groundwater quality. It has been deleted. A statement on the Tehama formations has been added.

Section G.6. Vegetation

Comment: [page 115] Table III-20: The federal listing status of Suisun Slough thistle and soft bird's beak should be updated. (DFG)

Reply: Table III-20 has been revised to indicate that the federal listing status of these species is "endangered."

Section G.7. Fish

Comment: [page 117] Table III-21. Sensitive Fish Species in the San Francisco Bay Estuary, Tidewater goby: It should be noted that tidewater goby has been extirpated from most of its historic range in the San Francisco Bay estuary. Historically, it was found in both Corte Madera and Novato creeks. (USDOI)

Reply: Table III-21 has been modified to include a footnote indicating that the tidewater goby is believed to have been extirpated from most of its historic range in the San Francisco Bay estuary.

Section H.1. TULARE LAKE BASIN, Geography and Climate

Comment: [page 120] Figure III-15, the map of the Tulare Lake Region, shows all of the Lemoore Naval Air Station as irrigated lands. A portion of this naval base is urbanized and, like the cities of Huron and Coalinga, relies on a CVP water supply. In addition, the map does not depict the City of Mendota. (WWD)

Reply: Figure III-15 has been revised to accurately depict Lemoore NAS and the City of Mendota.

Section H.4. Water Supply

Comment: [page 121] The process for deciding when to route high flows from the Kings River system into Mendota Pool and thence to the San Joaquin river should be briefly described. Adjustments in Friant Unit water demand in wet or high flow years should be discussed in context with other SWP and CVP supplies and deliveries. This is particularly important in analyzing Flow Alternatives 3 and 4. (DFG)

Reply: The discussion suggested is beyond the scope of the EIR, and the level of detail is unnecessary. The decision will not have impacts in high flow years. No change to the text is necessary.

Section H.4.a. Surface Water Hydrology

Comment: [page 122] "The last major overflow of Tulare Lake Basin to San Joaquin River occurred in 1983." The term "major" is, of course, subjective but there have been significant (again a subjective term) flows more recently. (USDOI)

Reply: The sentence has been deleted.

Section H.4.c. Ground Water Hydrology

Comment: [page 123] The comment about the Corcoran Clay horizon being below well depths should be deleted. This is pure speculation, based primarily on surface geophysical surveys. It would be better to say that there has been a lot of controversy over whether or not the Corcoran Clay is present in much of Kern County. It is generally now agreed that it is not present in most of the Kern Fan. Also, other less regionally extensive clay layers are more important confining beds in some parts of the valley. (SJRECWA-1A)

Reply: A conclusion based on surface geophysical surveys is not pure speculation, although it does constitute indirect evidence rather than direct evidence. Nevertheless, the text has been revised to reflect your comment about the Corcoran Clay in the Kern Fan area. The text notes the existence of other confining beds in some parts of the Valley.

Section H.4.d. Ground Water Quality

Comment: [page 124] The discussion of groundwater quality is inadequate. There should be some differentiation between reliance on groundwater for drinking water and reliance on groundwater for irrigation, both in regards to availability and quality. (WWD)

Reply: The text has been revised to point out the general adequacy of groundwater quality for agricultural uses and to distinguish that the contaminant problems primarily affect the urban uses. The aspect of availability is addressed in the section on water supply.

Section H.7. Fish

Comment: [page 128] We are not aware of any white bass populations in the Tulare Basin at this time. Also, there appears to be an error in common name-the "pine gopher snake" under the Wildlife section. (DFG)

Reply: Reference to white bass in the basin has been deleted. The pine gopher snake reference has also been deleted.

Section I.4. CENTRAL COAST REGION, Water Supply

Comment: [page 134] Modify first full paragraph, third sentence to read: "The completion of the Coastal Branch of the SWP in 1997 has lessened the reliance on groundwater supplies in San Luis Obispo and Santa Barbara counties. The Coastal Branch facilities transport . . . (DWR)

Reply: Revision made to text as suggested.

Section I.7. Fish

Comment: [page 140] Table III-28 and associated text needs to be revised to indicate the status of steelhead on the central coast as "threatened" under the federal ESA. (DFG)

Reply: Revisions made to text and table reflecting the current status of steelhead ESUs on the central coast.

Section J.4. SOUTHERN CALIFORNIA, Water Supply

Comment: [page 146] The water supply section discusses water supplies imported to Southern California, first addressing the Los Angeles Aqueduct and the Colorado River Aqueduct, stating that these "import facilities have been operating at or near capacity." Then, it proceeds to describe the SWP, which is the third major source of the region's imported supplies. The document identifies that SWP contractors in this region have "entitlement to 2.5 million acre-feet." As stated, this section may lead to the misconception that the SWP Contractors in Southern California receive close to their full entitlement supply. The FEIR needs to clarify that some of these contractors do not currently receive their full entitlement. (MWD)

Reply: Revision made to clarify this point.

Comment: [page 146] The DEIR states that approximately "10 percent of the region's 1990 level water supply" was imported via the Los Angeles Aqueduct and this facility operates at or near capacity. The DEIR fails to identify three significant events which occurred subsequent to 1990 and which will significantly reduce imports to the region via the Los Angeles Aqueduct. These events were: (1) Adoption by the Water Board of Water Right Decision 1631, which substantially reduced the water available for export from the Mono Basin; (2) approval by the City of Los Angeles and the County of Inyo of the Inyo-Los Angeles Agreement, which will substantially reduce the quantity of groundwater that can be exported from the Owens Valley; and (3) adoption by the Great Basin Unified Air Pollution Control District of a state implementation plan, which provides for the release of water by the City of Los Angeles onto the historically dry Owens Lake bed to control the emission of PM10. Together, it is anticipated that these events will reduce the quantity of water imported into the region via the Los Angeles Aqueduct by up to 120,000 acre feet per year, which is in excess of 25% of historical diversions of the Los Angeles Department of Water and Power. (WWD)

Reply: The text has been revised to include the information stated above.

Comment: [page 146] The DEIR states "[s]upplemental water is imported [into the Southern California region] from three sources: (1) the Owens Valley and Mono Lake Basin; (2) the Colorado River; and (3) the SWP." Inasmuch as these three sources supply two-thirds of the region's water and are the primary sources on which the region relies, it is inappropriate to describe them as "supplemental." (WWD)

Reply: The text has been revised and the term "supplemental" has been deleted.

Section J.4.b. Surface Water Quality

Comment: [page 150] The DEIR reports the concentrations of total dissolved solids contained in water imported to southern California via the SWP and the Colorado River Aqueduct. It fails, however, to report the levels of TDS imported via the Los Angeles Aqueduct. According to the FEIR prepared for the SWRCB in connection with Water Right Decision 1631, total dissolved solids (measured by conductivity) in Los Angeles Aqueduct water ranged from 307 to 350 [micro]S/cm. At

the Los Angeles Filtration Plant intake, the mean TDS is 313 [micro]S/cm, with a minimum of 214 [micro]S/cm and a maximum of 454 [micro]S/cm. (WWD)

Reply: The text has been revised to indicate the quality of water imported via the Los Angeles Aqueduct.

Section J.7. Fish

Comment: [page 155] Include tidewater goby as a southern California coastal fish species. Tidewater goby is distributed in coastal California from the Oregon border to the Mexican border. (USDOI)

Reply: The tidewater goby is listed in Table III-32 Sensitive Fish Species in the Southern California Region.

CHAPTER IV. ANALYTICAL METHODS

Comment: The DEIR regularly separates the calendar year into "ag-diversion" times and "non-ag" times. This is misleading. Although most ag diversions occur from April-September, there are significant fall diversions, substantial diversions before April in dry years, and some year-round diversions. (SDWA)

Reply: Comment noted. For the purposes of this DEIR, ag diversion times generally describe the April to September period. The SWRCB acknowledges that significant ag diversions can occur outside of this period.

Comment: It is impossible to model the SJRA, or indeed any alternative unless one knows the source of the flows to be provided. The results of any modeling will change depending on whether the water provided is from a decrease in consumption, a rescheduled power generation release, or recaptured return flow. (SDWA-2)

Reply: Reasonable assumptions are made regarding the source of water from individual water right holders under each of the alternatives. The EIR assumes for Flow Alternatives 3, 4, and 5 the water provided to meet Bay/Delta obligations comes first from reservoir re-operation and then, to the extent necessary, from diversion reduction. Alternative 6 assumes water comes from the Delta via releases from the Delta-Mendota Canal. Alternatives 7 and 8 assume that water comes from reservoir re-operation for Merced I.D. and MID/TID, and from returns to the system of diverted water for OIS, SSJID, and the Exchange Contractors. The commentor is correct that an individual water user, especially a reservoir operator, has flexibility in incorporating a new demand into its operation, but it is not feasible to analyze all possible operational decisions available to the water user.

Comment: The SWRCB should not rely heavily on the various models used in the analysis contained in the DEIR. While the FWUA understands that those models are the only tools available for determining the flows required under the alternatives and evaluating the impacts of those flows, the DEIR itself recognizes that the models are not fully capable of analyzing all water supply, economic, sociological and biological impacts of any Alternative. The SWRCB must therefore augment modeling results with other evidence and input in determining for itself the likely impacts of each alternative and should not base any decision on modeling results alone. (FWUA)

Reply: Comment noted. The proper forum for presenting "other evidence and input" is the water right hearing.

Section A. DWRSIM

Comment: [page 01] East Park, Stony Gorge and Black Butte reservoirs should not be required to meet Plan objectives. These reservoirs have little capacity to contain winter storm flows for later release. Their operations are not modeled by DWRSIM, and impacts cannot be analyzed. (SCBLOC, TCCA)

Reply: Flow Alternatives 3, 4, and 5 have the potential to affect East Park, Stony Gorge, and Black Butte Reservoir. The other alternatives assign responsibility solely to the SWP and CVP. Though the water rights at these reservoirs are held by the USBR, they are considered local projects which are not

operated as part of the CVP. Table II-5 lists parties who would be affected by Alternatives 3 and 4. Stony Gorge and Black Butte are listed in the table. Table II-8 lists parties affected by Alternative 5, including Black Butte Reservoir. East Park is not on Table II-5 because the water rights are pre-1914. East Park and Stony Gorge are not on Table II-8 because individually their capacity is less than 100 TAF.

The Stony Creek reservoirs are not modeled in DWRSIM. Rather, operations are predetermined based on historical data and fed into the model as hydrologic input. It is not necessary that a reservoir be modeled by DWRSIM for it to be included in Alternatives 3, 4, or 5. The modeling studies provide sufficient information for the SWRCB to determine when water right holders of a particular priority must cease diversions to storage under Alternatives 3 and 4. The impact on any particular reservoir depends on whether or not that reservoir is storing water, and, if so, how much, during periods when diversions are curtailed. Inclusion of a reservoir in Alternative 5 is based solely on the reservoir's size, ability to control flows in a tributary, and hydraulic continuity with the Delta.

Comment: [page 01] The DEIR should quantify the accuracy of both DWRSIM and DWRDSM. DWRSIM may underestimate salinity at Vernalis and DWRDSM over-estimates salinity in the Delta. Discussions in the EIR regarding salinity should be modified based on the results of the model verifications. (CCWD, CCWD-2)

Reply: It is not necessary to verify the accuracy of model salinity output and document it in this EIR. Perfect correlation between calculated and observed data is a desirable but elusive goal to achieve. Generally speaking, the models tend to overestimate salinity as often as underestimate it. In this EIR, model results are used for qualitative comparisons among alternatives, and are not intended to provide quantitative predictions of actual conditions.

Comment: [page 01] Information provided in the DEIR does not provide sufficient information to verify that the DWRSIM modeling was done correctly. The monthly time step used in DWRSIM precludes analysis of April 15 - May 15 pulse flow operations. The monthly time step also masks the effects of winter storm phenomena and short-term reservoir operations for flood control. (SFPUC, SVWU, TCCA)

Reply: Computer modeling involves making logical assumptions about complex, real world systems. It is impossible to model every variable in a complex system, therefore assumptions are made regarding uncertainties in the system. Assumptions used in DWRSIM have been made under an open process with input from engineers and scientists from various agencies and interests. Model results are subject to public scrutiny and source code is available through the Department of Water Resources, Division of Planning (Delta Modeling Section), and the staff of the SWRCB. DWRSIM models reservoir operation based on a 73-year hydrological record and is presently the best statewide reservoir operations model available. For flow Alternatives 1 - 7 and Joint POD alternatives 1 - 8, DWRSIM models the April 15 - May 15 Vernalis pulse flow requirements by splitting the total required amount of water into April and May. Flow Alternative 8 and JPOD Alternative 9 use a more recent version of DWRSIM. For these two alternatives DWRSIM uses a bimonthly time step for April and May.

Comment: [page 01] The FEIR should fully disclose the assumptions regarding accretions to and depletions from the Sacramento and San Joaquin rivers. Modeling fundamental to evaluating these flow alternatives did not include the "rice to wetlands" program in the Sacramento Valley which

significantly changes the pattern of Sacramento River flows that reach the Delta. The DEIR should have discussed where and when flood control releases are made and how they could affect each alternative. These deficiencies should be corrected in the FEIR. (DFG)

Reply: The modeling assumptions are described in considerable detail in Chapter IV. Greater detail is available in documents prepared by the DWR which are referenced in the chapter. The modeling which was done for the DEIR used the best hydrology information available for the comparative analysis of the flow alternatives. Depletions for "rice to wetlands" programs were not sufficiently determined for inclusion in the modeling. However, flood control operations are included in the modeling.

Comment: [page 01] The DEIR's consideration of reservoir refill impacts appears deficient. For example, after stored water is delivered to satisfy Bay/Delta outflow requirements during critically dry years, a "hole" is left in the affected facility, which is filled during the following years' inflow. This increases the volume of water diverted to storage in both SWP and CVP reservoirs in those subsequent years. Accordingly, it also decreases the flow available to meet downstream demands such as Delta outflow and to satisfy deliveries based on prior rights, making it more likely that there will be a shortage in subsequent years. The DEIR does not appear to take these and related adverse environmental impacts into account in its methodology. (SVRC)

Reply: The SWP/CVP reservoirs are operated dynamically in the DWRSIM model. The model is designed to meet downstream consumptive demands, instream flow requirements and delta objectives. The resulting reservoir refill impacts, expressed in terms of carryover storage, are analyzed in Chapter 5, section B. Reservoirs generally fill in the winter, when flow objectives are being met.

Comment: [page 01] The DEIR's modeling approach assumes perfect foresight of when a drought will end and when the lowest reservoir level will occur. In practice, operators must maintain some level of carry-over storage to protect against events not yet experienced. Failure to account for additional carry-over storage results in understated water supply impacts. (TID&MID)

Reply: The version of DWRSIM used by the SWRCB was "blind" to future hydrologic conditions with respect to CVP and SWP reservoir operations. Therefore, most of the water supply impacts were not underestimated for the reasons stated by the commentor. The San Joaquin basin reservoirs are an exception and were operated with "perfect foresight". However, it is reasonable to assume that past hydrology is representative of future conditions. Furthermore, the analysis is adequate to show the relative difference among alternatives.

Comment: [page 01] USBR believes that the use of the DWRSIM model to analyze releases from New Melones for salinity control in the Southern Delta will understate the quantity of water required. As a consequence of understating the water needed for salinity control, the reservoir appears to have a better capability to meet its other obligations. Use of the SJRIO model will better model salinity control in the San Joaquin River. (USDOI)

Reply: Comment noted. Table VIII-6 of the DEIR compares the dilution release requirements as modeled by DWRSIM and SJRIO. This table indicates that on average SJRIO requires 20 TAF more dilution water per year than DWRSIM in order to achieve the Vernalis salinity objectives. In general,

these models should be used principally for comparison purposes among alternatives, not to determine the absolute quantity of water needed to meet the objectives.

Comment: [page 02] The FEIR should clarify whether water dedicated for environmental purposes under CVPIA section 3406(b)(2) is included in the modeling assumptions. The FEIR should take note of the Department of Interior's November 20, 1997, Administrative Proposal on management of the (b)(2) water. (SVWU, SEWD, DFG)

Reply: Certain requirements which may be credited against the 800 TAF of "dedicated environmental yield" under CVPIA are included in the base case. These are listed on page IV-4 under the heading "CVPIA Flow Criteria". The Shasta target storage criteria were required by SWRCB Order 90-05. As this order predates CVPIA, the operations associated with temperature control in the upper Sacramento River are included in the base case. The Department of the Interior's Administrative Proposal on management of the section 3406(b)(2) water (800 TAF) was issued after the DEIR, and is the subject of ongoing litigation. Therefore, it is speculative and is not considered in the base case or the alternatives.

Comment: [page 02] Both DWR and the San Luis Unit of the CVP have concluded that the USBR has already dedicated at least 800,000 acre-feet of water for fishery purposes under the CVPIA mandate. The San Luis Unit has brought suit challenging the Administrative Proposal for that water on this very issue. Given the disagreement, it should be open for discussion during these hearings whether or not additional water should be plugged into the models to determine the effects of this implementation. (SDWA)

Reply: The CVPIA flow criteria incorporated into the DWRSIM modeling is described on Page IV-4. Full use of the (b)(2) water was not included in the modeling because it is still the subject of litigation.

Comment: [page 02] Under item 5 of limitations, the DEIR states that the depletion analysis model accounts for use of groundwater, but groundwater is not physically modeled. This raises a question regarding the adequacy of any conclusion that there are no impacts to the groundwater. (SVWU)

Reply: The depletion analysis takes a very simplified approach to surface and groundwater interactions in upstream areas. However, the impacts to groundwater were not modeled. Rather, the groundwater impacts were qualitatively assessed by assuming that the modeled delivery reductions would be made through groundwater pumping. Based on this analysis, the DEIR concluded that there would be several significant impacts to groundwater resources. Please see Chapter VI, section C.11.

Comment: [page 02] The monthly time step in DWRSIM does not model some hydrologic phenomena such as storm flows. It should be added that other short-term aspects of project operation, such as daily pumping rates, changes and associated environmental effects cannot be modeled in the monthly time step model. (USDOI)

Reply: Revision made to text.

Comment: [page 03] It is unreasonable to assume that minimum fish flows below Lewiston Dam on the Trinity River will be maintained at 340,000 acre feet per year. The Trinity River Flow Evaluation Study recommends flows, based on water year type, which range from 368,621 acre feet to 815,226 acre feet per year. This increase in minimum fish flows should be included in the assumptions on either page IV-3 or IV-4, under CVPIA Flow Criteria. (WWD)

Reply: The issuance of the DEIR (November 1997) preceded the release of the Trinity River Flow Evaluation Study, Draft Final Report (January 1998) with its recommended flows. The CVPIA provides that the existing Trinity River fishery releases of 340 TAF will remain in effect unless increased by an act of Congress, appropriate judicial decree, or agreement between the Secretary of the Interior and the Hoopa Valley tribe based on the recommendations of the Study. The modeling work for the DEIR took place considerably before the flow recommendations were made available and, at this time, the recommended flows still have not been implemented. Therefore, the modeling assumptions used to evaluate the alternatives for implementing the 1995 Plan reasonably represented conditions at the time of the DEIR issuance and it would be unreasonable to revise the modeling assumptions at this point. The discussions of the Trinity River Flow Evaluation Study in Chapters III and XII of the FEIR have been revised to include the recommendations of the January 1998 Draft Final Report.

Comment: [page 03] The DEIR gives American River flow requirements as ranging between 250 cfs and 3,000 cfs. This understates both the environmental needs and current operating practices of the USBR, which has, at least on an interim basis, been using the Hodge Decision flows (in Environmental Defense Fund et al. V. East Bay Municipal Utility District, Alameda County Case No. 425,955) which requires that flows of 2,000 cfs from October 15 through February, 3,000 cfs from March through June, and 1,750 cfs from July through October 14 be met before EBMUD can take delivery of water from the Folsom South Canal. (DFG)

Reply: Revision made to text on pages IV - 3 and IV - 4. Current flow releases to the lower American River in October through February are based on available storage in Folsom Reservoir; March through September flow releases are based on storage and inflow to Folsom Reservoir. Releases are maintained per USBR operation criteria outlined in an April 26, 1996 letter from USBR to the SWRCB. The Hodge Decision flows are met whenever storage and inflow are adequate to meet those requirements.

Comment: [page 03] The 2,500 cfs during October and November mentioned in item 4 is not a maximum flow restriction. DWR's agreement with DFG specifies that if flows remain below 2,500 cfs from October 15 through November 30, the minimum fish flows are 1,700 cfs through March whereas if maximum flows between October 15 through November 30 exceed 2,500 cfs, we can only decrease 500 cfs from that high point. There are some other caveats like unplanned releases and shortage years. (DWR)

Reply: Revision made to text.

Comment: [page 03] The DEIR should be corrected to identify the water year as beginning on October 1 and ending September 30. (SVWU)

Reply: Revision made to text.

Comment: [page 04] The New Melones reservoir operation incorporated into the modeling is a mixture of old and new operations. Since 1994, significant changes in Stanislaus River operations have occurred with the identification of AFRP goals for the river and the development of an interim operations plan among Stanislaus River stakeholders. The DEIR analysis does not incorporate these changes and thus the hydrologic analysis is flawed. For example, increases in carryover storage identified for some of the flow alternatives seem unlikely if New Melones Reservoir is being operated under the interim agreement and to meet AFRP flows. The assumptions regarding New Melones operations have a direct bearing on the existing environmental and water supply setting, and the subsequent impacts associated with each alternative. (SFPUC, SDWA-2)

Reply: The Stanislaus River operations were modeled based on a letter from the USBR dated April 26, 1996. The letter recommended modeling criteria for New Melones Reservoir. Subsequently, the USBR implemented the New Melones Interim Operations Plan. Although this plan is currently implemented, it is in a state of flux. Other operating criteria might be imposed as a result of several ongoing actions, including the proposed project.

The hydrologic analysis is not flawed. The DEIR indicates that carryover storage in New Melones Reservoir increases for Alternatives 5, 6, and 7 compared to the base case. For Alternatives 5 and 6, this effect is due to shifting the responsibility to meet Bay/Delta Plan flows at Vernalis from New Melones Reservoir to other sources. For Alternative 7 carryover storage increases because the flow objectives are reduced and the releases for salinity control are capped at 70 TAF.

Comment: [page 04] Channel capacity on the Stanislaus River is assumed to be 8,000-acre feet in the DEIR. While this number may be accurate for flood releases, it is misleading for year round releases. A court order currently limits nonflood releases from New Melones Reservoir to 1,500 cfs. Using any other limitation in the model may overstate the ability of New Melones to meet downstream requirements. (CDWA, USDOI, SDWA, SEWD)

Reply: The assumptions used in modeling Stanislaus River operations were as follows: (1) for Flow Alternatives 1 through 7, channel capacity was set at 8,000 cfs. Flows were allowed to fluctuate as needed to meet Vernalis flow and water quality requirements, (2) for Flow Alternative 8, flow was limited to 1,500 cfs unless New Melones was being operated for flood control.

Flow Alternative 2, in which Delta obligations are assigned entirely to the projects, places the highest demand on New Melones. Under Alternative 2, the USBR must meet both the Vernalis flow and water quality objectives. Four sources of water are available to the USBR for this purpose. It may either (1) release water from New Melones, (2) release water from Friant, (3) recirculate water through the Delta Mendota Canal, or (4) purchase water from willing sellers on other San Joaquin River tributaries. The assumption in Alternative 2 is that all water to meet objectives came from New Melones. This assumption was selected because it seemed unlikely that the USBR would choose to release water from Friant or the Delta Mendota Canal for these purposes and no attempt is made to model voluntary water transfers because of uncertainty regarding their source and availability.

The court order referenced in the comments allegedly places a restriction of 1,500 cfs on Stanislaus River flows, except when the reservoir is being operated for flood control. An analysis of the DWRSIM results for Alternative 2 indicates that the limitation is exceeded in April in 23.3 percent of the years modeled, 39.7 percent of years in May, and 2.7 percent of years in June. The maximum exceedence is 2,125 cfs. The April/May exceedences result when New Melones is being operated to meet the Vernalis pulse flow. Water quality releases are made occasionally in the December to February period and frequently between June and August. These releases cause no flow exceedences.

When the Stanislaus River flows exceed 1,500 cfs, about 1,400 acres of orchards adjacent to levees on the lower Stanislaus are subject to damage by induced seepage.

If the SWRCB were to choose as a preferred alternative one of the flow alternatives which was modeled with Stanislaus flows exceeding the limitation, the USBR could either eliminate the limitation by purchasing and retiring the affected agricultural land, or it could continue to operate within the capacity limitations and channel capacity and purchase any additional water needed to meet the flow objectives from willing sellers. The channel capacity is sufficient to provide Vernalis water quality flows even assuming the flows must be maintained at less than 1,500 cfs.

Comment: [page 04] What happens under Alternative 2 when New Melones goes to dead storage? What are the impacts to the Stanislaus River and the San Joaquin River? (SJRG)

Reply: Under Alternative 2, when New Melones reaches dead storage, the Vernalis salinity objectives are violated.

Comment: [page 04] The April 26, 1996 letter referenced is not contained anywhere in the documents. Upon obtaining a copy of the letter, it is still not clear how CVP demands are met. While the letter provides a range of flows depending upon carryover storage and inflow, it is impossible to determine how much water is provided in any given year type. This must be available to make an accurate determination of impact, and to check the results reached by the EIR. (SEWD)

Reply: The water supply impacts to Stockton East Water District of the various flow alternatives are listed in DEIR Table V-2. If the commentor wishes to analyze the impacts by water year type, the data are available on the internet as DWRSIM control point 670 actual diversion.

Comment: [page 04] "Additional minimum flow requirements" are not actually imposed for dissolved oxygen. Rather, New Melones is required to meet a dissolved oxygen standard on the Stanislaus River. Water quality and other flow releases ordinarily meet the DO standard, and that additional water is rarely, if ever, released to meet the DO objectives. Therefore, we question the accuracy of the 15.2-17.4 TAF per month estimation. (SEWD)

Reply: The comment is correct that water is rarely released for the purpose of meeting the dissolved oxygen objective at Ripon. The model assumes that 15.2 to 17.4 TAF per month is needed for the objective. The fish flow and Vernalis water quality requirements are normally operating simultaneously and require larger amounts of water. Therefore the DO requirement is met by default.

Comment: [page 04] The DEIR's operation assumptions for the Tuolumne River are erroneous and thus impacts are not correctly determined. Two assumptions inherent to the DEIR's simulation of Tuolumne River operations lead to a flawed impact analysis: 1) the DEIR analysis assumes that the minimum operating level of New Don Pedro Reservoir is 100,000 acre-feet, and 2) the DEIR analysis assumes no operating rule for carry-over storage. The FERC license for the New Don Pedro project requires the maintenance of 309 TAF minimum pool in the reservoir. Turlock ID and Modesto ID cannot operate below this level without violating the terms of the FERC license. (SFPUC)

Reply: DWRSIM results indicate that under Flow Alternatives 3 and 4, once the reservoir is past the initial fill period in 1921-22, the low point of 403 TAF is reached in December 1993. Under Flow

Alternative 5, the low point is 218 TAF in the same month. Thus, only Alternative 5 reduces the reservoir below the FERC limit. Whether such operation is barred or preempted by the Federal Power Act is an unsettled legal issue. Only TID and MID's consumptive use rights are listed on Table II-5.

With regard to carryover storage rules, rules built into the SANJASM model were incorporated into DWRSIM. With the exception of the months in Alternative 5 when the reservoirs goes below 309 TAF, there appears to be sufficient water in the reservoir to satisfy demands.

Comment: [page 04] There should be an independent third party analysis of the DWRSIM model design and operation. (CFWID)

Reply: Third party review of analytical models, such as DWRSIM, is provided by the Bay/Delta Modeling Forum. Parties participating in the Modeling Forum represent a variety of interests, including regulatory and resource agencies, water purveyors, and environmental organizations. DWRSIM is generally accepted as a good tool for modeling Central Valley river and reservoir operations. Furthermore, the assumptions and results were reviewed by SWRCB staff.

Comment: [page 04] A brief description of minimum flow requirements on the Merced River should be included. The extent to which CVP export demands are reduced in "certain wet years" when flows from the James Bypass (a.k.a. Kings River North) are available in Mendota Pool should be described in the FEIR. A summary of the agreements and water rights associated with these flows should be included in all appropriate sections of the FEIR to enhance disclosure of water operations under the alternatives considered. (DFG)

Reply: The minimum fishery flows on the Merced River below New Exchequer are maintained per FERC agreement 2179. Minimum flow ranges from 16 to 101 cfs; minimum monthly flow volumes depend upon the season and the water year type. The necessary revision has been made to the text.

Comment: [page 05] The maximum pumping rate is not 8,500 cfs under Army Corp of Engineer Public Notice 5820-A as described in the third paragraph. The 8,500 cfs maximum pumping rate is used for modeling purposes to reflect physical and operational constraints experienced with Skinner Fish Facility screens and Clifton Court Forebay trash racks. Public Notice 5820-A limits diversion to a 3-day average of 13,250 AF/day plus an additional amount equal to one-third of total flow at Vernalis during December 15 to March 15 when flows at Vernalis exceed 1,000 cfs. (DWR)

Reply: A revision made to the text removes the reference to pumping constraints being related to criteria contained in PN 5820-A. Similar references in Chapter XIII have been revised as well.

Comment: [page 06] Reference is made to "draft Monterey Agreement criteria." Most SWP water contractors have signed the Monterey Amendment which amends their water supply contracts with the State to include provisions of the Monterey Agreement. The so-called "criteria" are provisions of the water supply contracts. (SWC)

Reply: Text has been revised in accordance with the comment. The words "draft" and "criteria" have been deleted from item 3 on page IV-6.

Comment: [page 07] The Central Valley Operations Studies performed for the SWRCB using DWRSIM all assume CCWD operations without the Los Vaqueros Project. The modeling for the DEIR should use a pattern of CCWD diversions that reflects these benefits to the Delta of the Los Vaqueros Project. (CCWD)

Reply: Los Vaqueros was not operational when the DEIR was released. Therefore, it was proper not to include it in the base condition in the DEIR. Los Vaqueros is included in the cumulative impact analysis.

Comment: [page 07] The assumed CVP export demand for the San Luis Unit is underestimated. Actual San Luis Unit contracts total 1,369,000 acre feet per year. An appropriate number for export demands, including losses, is approximately 1,460,000 acre feet per year. (WWD)

Reply: CVP San Luis export demands are based on past deliveries, not on the face value of the contracts. The values assumed for modeling purposes are appropriate.

Comment: [page 07] The DEIR should clearly note that the Exchange Contractors maintain the highest priority to water pumped by the Tracy Pumping Plant and that limitations on export pumping applied to the CVP and SWP affect the Exchange Contractors last. (FWUA)

Reply: The modeling assumptions regarding the order of imposing deficiencies on the CVP deliveries is described in Chapter 4, section A. This description is not intended to define the water rights of the Exchange Contracts. Rather, it is intended to describe the order in which DWRSIM assumes that deficiencies are imposed in the case of a shortage of water from the Shasta Unit of the CVP.

Comment: [page 07] The DEIR should recognize that Exchange Contractor and other Mendota Pool demands are frequently met with flood releases from Friant Dam as well as flood flows from the James Bypass. (San Joaquin River flows into Mendota Pool are limited to approximately 1300 cubic feet per second due to channel restrictions below the Chowchilla Bypass.) (FWUA)

Reply: Revision made to text.

Comment: [page 07] It should be noted that Exchange Contractor demands from the Delta-Mendota Canal are reduced when either San Joaquin River or James By-pass flows are available at Mendota Pool. (USDOI)

Reply: The text has been revised to reflect the comment.

Comment: [page 08] An explanation must be given as to why the 70 TAF cap on releases from New Melones Reservoir for salinity control at Vernalis was removed for the modeling studies, and why the cap was not included in the base case in accordance with past USBR practice. (SEWD, SDWA)

Reply: The 70 TAF cap on releases for salinity control was an operation decision made by the USBR. The USBR asserts that the cap is based on information in SWRCB Decision 1422, which

approved water right permits for New Melones Reservoir. D1422 states that the USBR estimated that up to 70 TAF of water would be needed to be released from New Melones Reservoir in order to achieve salinities of 500 ppm at Vernalis. This cap was not incorporated into the order, and is not a regulatory requirement that limits New Melones releases for salinity control. Because there is no cap in the USBR's water right permits the cap was not imposed in the modeling studies. The exception occurs in the modeling of Flow Alternatives 7 and 8 and Joint Point of Diversion Alternatives 6 and 9. These alternatives are negotiated agreements and incorporate operational decisions assumed by the agreements. Flow Alternative 7 and Joint Point of Diversion Alternative 6 assume the 70 TAF cap. Flow Alternative 8 and Joint Point of Diversion Alternative 9 assume a cap of 0 - 210 TAF as specified by the New Melones Interim Operations Plan.

Comment: [page 08] Under the Delta objectives discussion, there is no reference to the Emmaton criteria, also known as the Three-Mile Slough criteria, contained in the North Delta Water Agency contract. (SVWU)

Reply: The Delta objectives discussion referred to in the comment is a list of seven ways in which the DWRSIM modeling does not fully maintain the Delta objectives in the 1995 Bay/Delta Plan. The Emmaton criteria contained in the North Delta Water Agency contract with DWR are not listed in this discussion because there is no obligation under the Bay/Delta Plan to fully meet the Emmaton criteria. The Emmaton objectives in the Bay/Delta Plan are essentially the same as the Emmaton criteria during the April - August time period. The Emmaton criteria cover a broader time period than the Emmaton objectives, however, and are arguably more protective. Responsibility for meeting the Emmaton criteria outside of the April - August season would fall exclusively to the DWR by virtue of the contract.

Comment: [page 08] The Draft EIR describes the assumption that the Vernalis salinity objectives are satisfied by releases from New Melones. What is the minimum monthly Vernalis flows that are assumed necessary to satisfy the Vernalis salinity objectives? How does DWRSIM calculate these salinity objective flows? Why are the SJRIO estimates of Vernalis flows needed to satisfy the salinity objectives different than the DWRSIM estimates? (Stockton)

Reply: The alternatives cause upstream reservoirs to be operated differently which results in different flows at Vernalis throughout the year. Where Vernalis flows differ, EC will also likely differ. Even if Vernalis flows were the same among each of the alternatives, EC would still depend on the relative contribution of Stanislaus River flow, "local inflow," and San Joaquin River flow upstream of its confluence with the Stanislaus. This contribution is different for each flow alternative. The September - March Vernalis EC objective of 1000 µmhos/cm can be achieved with minimum Vernalis flows ranging from 1088 to 1286 cfs (or greater). The April - August EC objective of 700 µmhos/cm can be achieved with minimum flows ranging from 1121 to 2214 cfs (or greater). Therefore, there is no single Vernalis flow necessary to meet the Vernalis salinity objective.

DWRSIM uses the following procedure to calculate flows needed to satisfy the Vernalis salinity objective: DWRSIM first calculates San Joaquin River quality at Maze Road (upstream of the confluence of the San Joaquin and Stanislaus rivers) using a negative-exponential relationship (EC goes down as river flow goes up). For March - September the formula is $EC = 1117182/(Q^{0.62151})$. For October - February, the formula is $EC = 1177354/(Q^{0.62912})$, where Q is San Joaquin River Flow at Maze in AF/mo, and EC is in µmhos/cm. DWRSIM then adds in Stanislaus River flow and "local inflow". Vernalis salinity is then calculated using a flow-weighted average assuming Stanislaus River EC is 85 µmhos/cm and local inflow EC is 190 µmhos/cm from March - September and 280

µmhos/cm from October - February. DWRSIM assumes that additional water needed to meet Vernalis salinity objectives comes from New Melones reservoir. The Vernalis salinity objective usually controls operations in July and August; at other times of the year other objectives besides Vernalis EC usually control.

SJRIO estimates of Vernalis flows needed to satisfy the salinity objectives are different than DWRSIM estimates because the model assumptions are different.

Comment: [page 08] Delta objectives item 3 fails to identify that New Melones Reservoir storage levels near or below 80 TAF can have a catastrophic effect on water temperatures in the designated salmon spawning reach below Goodwin Dam as well as the reservoir trout fishery because the remaining reservoir pool will contain water with elevated temperatures and releases from the reservoir will be warmer than salmon eggs can tolerate. (DFG)

Reply: Comment noted. This section only describes the exceptions to meeting the Delta objectives that were included in the DWRSIM modeling. The section is not intended to address the effects of reservoir drawdowns. In Chapters VI and XIII, effects of the flow and joint POD alternatives on water temperatures in the lower Stanislaus River are described.

Section B. DWRDSM

Comment: [page 09] Are the DWRSIM assumptions similar to the SJRIO calculations? (Stockton)

Reply: Both models use flow/salinity relationships to calculate salinity at locations in the San Joaquin Basin. The relationships are different in the two models, and they are established at different locations in the watershed. SJRIO calculations are more detailed, with multiple flow/salinity relationships throughout the watershed, while DWRSIM uses just a summer or winter relationship in the San Joaquin River at Maze Road.

Comment: [page 09] Change the second sentence to "The equations are solved numerically using the Method of Characteristics for flows, stages, and velocities at discrete locations." (DWR)

Reply: Revision made to text.

Comment: [page 09] Revise the first sentence of the third paragraph to read: "The transport of dissolved water quality constituents..." (DWR)

Reply: Revision made to text.

Comment: [page 09] Revise the third sentence of the fourth paragraph to read: "... and a one to five minute time step..." (DWR)

Reply: Revision made to text.

Comment: [page 09] Revise the first sentence of this section to read: "DWRDSM is a mathematical computer model..." (DWR)

Reply: Revision made to text.

Comment: [page 09] Make a distinction between the two versions of the DWRDSM model used in the DEIR. Delta alternatives are analyzed using DWRDSM1, which uses the Martinez tide as the downstream tidal boundary condition. DWRDSM Suisun Marsh Version is used for Suisun Marsh alternatives, and uses the Golden Gate tide for its downstream boundary condition. Both versions are variants of the Fisher Delta Model. (DWR)

Reply: Revision made to text.

Section C. DISSOLVED OXYGEN MODEL

Comment: [page 10] In general, the DEIR describes Stockton's D.O model adequately. At the end of the discussion, Stockton suggests adding the following paragraphs: "The dissolved oxygen model has been calibrated with 1991 data and verified with 1993 and 1996 data. The year 1991 was critically dry, 1993 was an above normal year, and 1996 was a wet year. Thus, the model has been shown to simulate conditions under various hydrologic year types.

A sensitivity analysis of the model has also been performed. Such analysis provides information about which factors are more effective in raising the DO.Thus, the model is well suited to evaluate alternatives to meet the dissolved oxygen objective." (Stockton)

Reply: The text has been revised to include the proposed addition.

Section D. SJRIO MODEL

Comment: [page 11] The analysis of effects on upstream habitat may not be very biologically meaningful. Effects on anadromous species are analyzed based on DWRSIM results for April-June. This approach may be reasonable for American shad, but is probably not very relevant to Sacramento basin fall-run chinook salmon, the bulk of which typically migrate as fry during the January-March period. Inclusion of April may apply to late migrants, but the May-June flows are not informative. While including other months of the year may not change the conclusions of the DEIR, it will make it more technically sound. (DWR)

Reply: See comment for Chapter VI, Section C.2.a, Page 44 for reply. Analysis of impacts on upstream habitat has been replaced with an assessment of the effects of flow on major stream ecosystems in the Sacramento-San Joaquin River system on a year-round basis.

Section E. AQUATIC RESOURCE RELATIONSHIPS IN THE DELTA

Comment: [page 11] Section E (Aquatic Resource Relationships in the Delta) provides a good overview of the relationships used to analyze the effects of the alternatives on aquatic species. Unfortunately, recent studies have shown that many of these relationships have either deteriorated or

are not accurate. The preparers of the DEIR should not be faulted here, as these results are very recent. This does not mean that the conclusions of the DEIR are invalid, because the results are, at least, qualitatively sound. (DWR)

Reply: Additional text has been added that states that the relationships may be deteriorating in recent years. However, the relationships remain significant and we consider them adequate to qualitatively evaluate the relative effects of the alternatives on abundance of certain Delta species.

Comment: [page 12] The Estuarine Abundance/Outflow Relationships. This discussion provides no analysis of the extent, duration and magnitude of the reverse flow in the Central and South Delta channels because outflow is the only factor that has been used to draw these relationships. Outflow is the end result of inflow minus in-Delta use and exports. The regression relationships for the species mentioned may be particularly insensitive to the effect of exports because of the lack of statistical independence in the factors used to construct the models. (SVWU)

Reply: See comment for Chapter IV, Section E.2, Page 12 for reply. For many Delta species, abundance shows a stronger relationship to outflow than to Delta exports. These relationships do not include all the factors that may influence abundance.

Comment: [page 12] The discussion of models used to predict aquatic resource relationships in the Delta is flawed for several reasons. In general, these models may be of limited validity in extrapolating future conditions rather than interpolating conditions that have been used in constructing the models. The extent to which manipulated future conditions differ from those used to construct the models may affect the reliability of predictions. (SVWU)

Reply: See comment for Chapter IV, Section E.2, Page 12 for reply. The aquatic resource relationships used were considered valid for qualitative comparison of the effects of the alternatives on aquatic resources. The relationships may change in the future due to changed conditions in the Delta.

Section E.1. Salmon Smolt Survival Models

Comment: [page 12] The USFWS salmon smolt survival models have several inherent analytical problems and should not be used as the basis for any analysis contained in the EIR. Consideration should be given to using the new Sacramento River salmon smolt survival model developed by Ken Newman and John Rice. (DWR, DFG, SVWU, SFPUC, SJRG, SDWA, SWC, USDOI, BCID)

Reply: The statistical validity of the USFWS smolt survival model has been disputed (Kimmerer 1994). A peer review analysis facilitated by Kimmerer concluded that the models are too complex, contain too many parameters, and inappropriately convert smolt survival index values to probabilities to calculate survival through successive reaches of the Delta.

However, the salmon smolt models are not used in the EIR as quantitative management tools and they are not used to establish the outflow or export objectives. The models are used only for qualitative comparisons among the alternatives and to illustrate the factors that are believed to affect smolt survival. The models have been modified to increase their ability to predict outside the range of the original data set.

The salmon smolt survival model developed in 1997 by Ken Newman and John Rice (Newman and Rice 1997) has been recommended as an alternative method of analysis. This model was not used to analyze impacts of the alternatives for the following reasons:

1) There is no consensus on the adequacy of the Newman/Rice model. Although the bases of the USFWS models have been challenged, they have been used in similar evaluations of changes in water management in the Delta.

2) The Newman/Rice model includes only survival of runs on the Sacramento River and not the San Joaquin River, and

3) The primary factors that would be affected by implementation of the alternatives are not major factors in the Newman/Rice model. The estimated effect of Delta exports in the model was small. The flow factor in the model generally is compensated by the effect of the salinity factor. Water temperatures in the Delta, an important factor in the model, were assumed not to change under the alternatives. Therefore, the only major parameter included in the model that would be affected by implementation of the alternatives is the closure of the Delta Cross Channel gates.

References:
Kimmerer, W. 1994. Setting Goals for Salmon Smolt Survival in the Delta. August 10, 1994. 15 pp.

Newman, K. and J. Rice. 1997. A statistical model for the survival of chinook salmon smolts outmigrating through the lower Sacramento-San Joaquin system. November 19, 1997. 67 pp.

Comment: [page 12] It does not appear that the models take into account the effects the barriers may have on smolt migration. As SDWA submitted at the prior hearings, the three tidal barriers in the absence of the Head of Old River barrier also provide a hydraulic barrier that benefits migrating salmon smolts. This can protect the substantial number that migrate before and after the pulse flow. (SDWA)

Reply: See comment for Chapter IV, Section E.1, Page 12 for reply. The USFWS salmon model does not incorporate the effects of the three tidal barriers in the absence of the Head of Old River barrier.

Comment: [page 12] "Survival, as predicted by the salmon smolt survival model, is enhanced by construction of a barrier at the Head of Old River." It is the operation of the barrier, not the act of construction, that some assume to provide survival benefits for San Joaquin fall-run smolts. (DFG)

Reply: Revision made to text.

Comment: [page 12] Add the words "transported" and "western," to the last sentence of the third paragraph so that the text reads as follows: "...through the export salvage facilities and then been transported and released into the western Delta." (USDOI)

Reply: Revision made to text.

Section E.2. Estuarine Abundance/Outflow Relationships

Comment: [page 12] The most recent and comprehensive data available should be used as the basis for analyses comparing alternatives within the DEIR. What is the significance of an increase in an abundance index for aquatic species? (DWR, SVWU, SJRG, SWC)

Reply: The EIR has been revised with the most recent abundance/outflow relationships provided by DFG.

An abundance index is a relative value that does not directly relate to an absolute population size. Abundance indices are useful in comparing the relative sizes of one year class to another, or as used in the DEIR to estimate the relative effect of implementing various alternatives. Each value is specific to species and/or sampling method. The abundance indices cannot be used to calculate a population estimate. Since there is a degree of error in the abundance indices predicted from the abundance/outflow relationships, small differences in the predicted abundance indices between the alternatives are probably not significant.

Comment: [page 13] Add to the end of the second paragraph: "However, there is evidence that a number of these relationships have deteriorated somewhat since the introduction of the Asian clam, Potamocorbula." (DWR)

Reply: Revision made to text (reference made to Kimmerer 1997 (IEP Newsletter)).

Comment: [page 13] Delete Sacramento splittail from the species list in sentence three of the third paragraph, then add the following to the end of the paragraph: "The outflow regression equation for splittail are less appropriate as year class strength is probably best associated with inundation of floodplain during the February-May period, which occurs in wet and extreme wet years (Sommer et al. 1997). The effect of the different alternatives was therefore addressed qualitatively based on expected frequency of high flow events." (DWR)

Reply: A sentence will be added to the second paragraph stating that Sommer et al (1997) suggest that Sacramento splittail abundance is more closely associated with the inundation of floodplains during the Feb-May period than the outflow/abundance relationship. However, we believe that the outflow/abundance relationship for splittail remains adequate for qualitative comparison of the alternatives, and predictions using the relationship are included in the FEIR.

Comment: [page 13] The pages indicated for Chapter VI in the last sentence are not accurate. (DWR)

Reply: The page numbers refer to Chapter VI of the Environmental Report for the Bay/Delta Plan, May 1995, not the DEIR.

Section E.3. Striped Bass Model

Comment: [page 13] The SWRCB should view striped bass modeling results with caution. The striped bass model fails to account for the dynamic nature of interacting factors affecting the Bay/Delta striped bass population. The model is useful only for estimating young-of-the-year abundance, not adult populations. Model results do not reflect actual conditions. (DWR, SVWU, SFPUC, SWC, USDOI)

Reply: The abundance of adult striped bass was not modeled in the FEIR for the following reasons: 1) recent literature indicates that many factors other than those included in existing adult striped bass models affect the size of the adult striped bass population (Bennett and Howard 1997; Kimmerer 1997b), and 2) the alternatives under consideration will primarily affect the young-of-the-year life stage through changes in Delta outflow and exports.

A multiple regression has recently been developed by DFG relating total young-of-the-year striped bass abundance at 38 mm. to the mean April to July San Joaquin River flow at Jersey Point, log net Delta outflow, and total Delta exports (including CVP, SWP, Contra Costa Canal, and miscellaneous Delta diversions) (Lee Miller, DFG, personal communication). Young-of-the-year indices for 1959 to 1998 were correlated with April - July flow data from DWR DAYFLOW. In the FEIR, this relationship was used to predict the effects of the flow, cumulative impacts, and Joint Point of Diversion alternatives on young-of-the-year striped bass abundance. The DWRSIM model was used to simulate flows for the project alternatives over the 1922-1994 period of hydrologic record.

Analysis methods are described in Chapter IV. Predicted young-of-the-year striped bass indices for the flow, cumulative impacts, and Joint POD alternatives are presented in Chapters VI, XII, and XIII, respectively.

Comment: [page 14] Add to the end of the third paragraph: "Moreover, the striped bass population data were recently reviewed by Kimmerer (1997), who concluded that interannual variability of recruitment once was, but no longer is, related to flow conditions and exports in the Estuary. These parameters continue to affect survival in young bass, but this variation is largely suppressed by density dependent mortality after the first summer. (DWR)

Reply: Revision made to text. In the FEIR, YOY abundance is predicted, not adult population size. The alternatives may have direct impacts on the YOY lifestage, but we concur that the size of the adult population is influenced by many other factors unrelated to implementation of the alternatives in this EIR. For more information, see response to comments regarding Chapter IV, Section E.3, Page 13.

Section F.1. WATER RIGHT PRIORITY ANALYSIS, Calculation of Water Subject to Allocation

Comment: [page 14] Commentors took issue with the manner in which "supplemental water" was calculated under Alternatives 3 and 4. Specifically, they indicated that:

1. The DEIR's suggestion that carriage water is no longer necessary because "outflow objectives control the majority of the time" misreads the SWRCB's clear intent in D-1485, D-1594, and the 1995 Bay/Delta Plan to protect fish and wildlife in the Bay/Delta ecosystem from the impacts of the state and federal export pumps;

2. The alternatives do not account for the Project's underlying obligation to protect Delta water users from salinity damage;

3. The alternatives would force curtailment of local diversions for export purposes;

4. The alternatives would allow the Projects to make storage releases to support increased exports under the export/inflow restriction which would result in an increased supplemental water obligation to be distributed among parties.

The SWRCB should examine the salinity and flow patterns in the Delta that would occur in the absence of the export operations to determine an appropriate base condition for protection of the health of the estuary. Any incremental flows necessary to (1) enhance water quality for any CVP or SWP Delta diversions, (2) mitigate for increased salinity resulting from export pumping, or (3) relocate and/or maintain the entrapment zone away from the effects of the CVP/SWP Delta diversions should be clearly and completely allocated to the CVP/SWP. (CCWD, DWR, GCID, RCRC, SVWU, SFPUC, SLDMWA, Shasta CWA, YCWA, YCWA-1)

Reply: 1. Carriage water requirements are the responsibility of the DWR and the USBR. If carriage water requirements can be defined, they will be assigned to these parties. The DEIR looks at extremes of no carriage water requirements to full assignment of all responsibility to meet objectives to the DWR and the USBR. Feasible methods to calculate carriage water should be submitted during the water right hearing.

2. In implementing Flow Alternatives 3 and 4, the SWRCB could assign an additional responsibility to the DWR and the USBR for salinity control if sufficient evidence is provided at the hearing to support such an action. Again, the DEIR looks at extremes of no specific assignment of responsibility to the DWR and the USBR for meeting salinity requirements to full assignment of all responsibility to meet objectives to the DWR and the USBR.

3. Because the Delta acts as a common pool for water released upstream, some of the water molecules from non-SWP/CVP reservoirs will be exported, just as they are under current conditions. However, Flow Alternatives 3 and 4 require the release of non-SWP/CVP water specifically for the purpose of meeting Delta inbasin entitlement including flow requirements.

4. There are a number of parameters that affect decisions regarding water project operations. Although the SWP/CVP may choose to increase releases from upstream reservoirs to support exports, supplemental water should not change significantly because supplemental water is calculated as the difference between storage releases and exports under Term 91.

The process suggested, in part, would require the development of a set of outflow objectives for the protection of fish and wildlife under the hypothetical condition of no export operations. These new objectives would be set at the same level of protection that exists under the Bay/Delta Plan objectives with export operations. The incremental flow difference between the sets of objectives would be assigned to the export projects. This task is not possible because the level of protection for fish and wildlife cannot be quantifiably defined. For purely salinity related effects, the comment suggests a method for establishing a carriage water term. The projects do not necessarily need to completely eliminate all possible increases in salinity caused by their operation. Project operations improve salinity conditions in some locations in the Delta and at some times during the year. As mentioned above, specific suggestions regarding carriage water should be suggested at the water right hearing.

The Alternative 3-4 methodology is appropriate for the DEIR, as it represents a "worst case" scenario in terms of impacts to water right holders.

Comment: [page 14] Inbasin diversions which would not have occurred but for the operation of the SWP and CVP should be viewed as project diversions. (CDWA)

Reply: Inbasin diversions which would not have occurred but for the operation of the SWP and CVP are viewed as project diversions under Alternatives 3 and 4. In order to be consistent with the Term 91 method, and the watershed protection statutes, whenever there is insufficient natural flow to meet the Delta objectives, then the projects must support their Delta exports with storage releases. However, inbasin contractors with no rights of their own, may be served from natural flow under project rights until there is no natural water available at the project's level of priority. When there is no flow available to serve project inbasin contractors, then these demands must be met from storage release. The comment infers that inbasin project diversions must always be met by storage release; this is not the case.

Comment: [page 14] The DEIR states that "the junior priority [resulting from the watershed protection statutes] extends only to the natural and abandoned flow in the system" and that "this junior priority does not apply to SWP and CVP storage releases or their imports into the basin." As previously commented, the reference to "basin" is ambiguous and confusing, as is the reference to "imports", particularly in the statutory context relating to watershed protection for, and counties of origin in the individual Bay/Delta tributaries (i.e., the San Joaquin and Sacramento River watershed). (Shasta CWA)

Reply: For purposes of the EIR, there are three "basins" tributary to the Delta. The two major ones are the Sacramento and San Joaquin river basins; a series of tributaries collectively called the Eastside streams form the third. For the purposes of the 1995 Bay/Delta Plan, the Eastside streams are lumped with the Sacramento basin. The San Joaquin basin may be further subdivided into areas on either side of the Panoche Divide.

The term "imports" refers to water imported into the Sacramento Valley from the Trinity River.

Comment: [page 14] The DEIR states that the beginning point of the water rights priority calculation is the recognition that the watershed protection statutes assign the SWP and the CVP export projects the most junior priority in the Central Valley. It is unclear whether the reference to watershed protection statutes is intended as a reference only to Water Code section 11460 (i.e., the Watershed Protection Act) or to all watershed protection and Area of Origin statutes, including Water Code Sections 10505 et seq. Accordingly, the discussion on page IV-14 of the DEIR should be clarified, consistent with page I-4 and II-17, to make clear that "watershed protection statutes" as used here means all such existing statutes. (Shasta CWA)

Reply: The phrase " Water Code section 11460 et seq. and 10505 et seq." has been inserted to clarify this point.

Section F.1.a. Vernalis Calculation for Flow Alternative 3

Comment: [page 15] Does the SWRCB plan to use runoff forecasts and monthly operations models when directing water right holders to curtail diversions? These tools have severe limitations and should not be used as the basis for dictating real time operations. (SJRG)

Reply: Implementation of the flow alternatives would not require the use of forecasts and models with the possible exception of Flow Alternative 8. The SJRG would be responsible under Flow Alternative 8 to ensure the Vernalis objective is achieved.

Comment: [page 15] Explain the statement that there are no SWP or CVP export projects in the San Joaquin River basin. Why aren't the state and federal pumps and San Luis Reservoir considered export projects within the San Joaquin Basin even though they are clearly within the basin as shown on Figure III-11? (SJRG)

Reply: The SWP and the CVP export pumps are located in the Delta, not in the San Joaquin River basin. Much of the water taken at the export pumps actually originates in the Sacramento basin. San Luis Reservoir is an offstream facility which stores water diverted in the Delta. The reservoir does have an insignificant inbasin component associated with the runoff from the local watershed. The Friant project is considered an export project under Flow Alternative 4.

Comment: [page 15] Explain how the SWRCB would implement the Vernalis flow under Flow Alternative 3 and 4 in "real time". What happens if the SWRCB's flow bypass estimate is incorrect? Do upstream water right holders receive a credit for water contributed in excess of the actual requirements? (SJRG)

Reply: CEQA does not require that the detailed institutional framework for implementing Flow Alternatives 3 and 4 be laid out in the DEIR. The SWRCB will determine the details of implementing and enforcing any flow requirements as a result of the Bay/Delta water right hearing.

Comment: [page 15] In the analysis of Flow Alternative 3, the water needed to meet the Vernalis flow comes from various reservoirs and not just New Melones. Does the model take into account the effects on downstream flows at later times of the year or in drought years resulting from increased flows on the various tributaries? (SDWA)

Reply: DWRSIM models a 73 year hydrologic period on a monthly timestep. The model accounts for the reduced flows that can occur later in the year or during drought periods due to reservoir reoperation to meet the 1995 Bay/Delta Plan flows. The downstream flow data referenced in the question may be found in section C.1 of Chapter VI.

Section F.1.b. Delta Calculation for Flow Alternative 3

Comment: [page 15] In the case of direct diverters that also have storage supplies, curtailment of direct diversions would result in increased releases of stored water. Such storage withdrawals could be significant and would result in refill and flow changes in the rivers and Delta that have not been addressed in the DEIR. Therefore, the impacts to water right holder's storage in the DEIR are not correct. (YCWA-1A)

Reply: The commentor is partially correct. Water right holders with large foothill reservoirs were treated as if their direct diversion rights were not subject to curtailment under Flow Alternatives 3 and 4, whereas their storage rights were subject to curtailment. Therefore, observed reductions in storage were due solely to storage bypass. For most major non-CVP/SWP reservoirs (New Melones, New Don Pedro and Lake McClure) this assumption is correct. For New Bullards Bar Reservoir the assumption may be incorrect because the curtailed water users may seek stored water supplies. Alternatively, however, they may pump ground water in which case the assumption is correct. The DEIR modeling showed that bypassing diversion to storage at New Bullards results in an average annual bypass of 2 TAF. YCWA performed its own analysis, taking into account the annual storage reductions due to curtailment of direct diversion. That analysis showed an annual reduction of 20

TAF. This is an insignificant reduction in annual storage and would have no impact on water supply availability.

Comment: [page 15] The impact analysis for alternatives 3 and 4 is flawed because SWRCB's modeling of supplemental water and allocation was not performed dynamically. (SFPUD, SJRG)

Reply: The commentors argue that the process used by the SWRCB to determine Supplemental Water and the required bypasses of diversion to storage is flawed because it does not capture the effect of one month's operation upon the next month, thereby potentially altering the amount of Supplemental water required in a subsequent month.

Significant storage bypasses were specified under Alternatives 3 and 4 at New Don Pedro Reservoir and Lake McClure. DWRSIM does not currently model these reservoirs dynamically. Therefore, the suggested analysis could not have been performed. The SWRCB has entered into a contract with the DWR to incorporate water rights information into DWRSIM which would allow the model to dynamically calculate Supplemental water requirements. The SWRCB believes that the calculations described in the DEIR tend to overstate the potential water supply impacts of the flow alternatives and therefore provide sufficient information to decision makers and the public for a decision on the project.

Comment: [page 15] The modified Term 91 supplemental water formula for Alternatives 3 and 4 is flawed due to non-recognition of surplus Delta outflows caused by CVP and SWP upstream flow requirements and export pumping restrictions. (SFPUC, SJRG, TID&MID)

Reply: Commentors pointed out that in 34 of the 73 years modeled, a supplemental water (SW) requirement and surplus Delta outflow coexisted during the month of June. When this occurs, the commentors felt that SW should be reduced by the amount of surplus outflow so that upstream parties would have an obligation only when the Delta is in a "balanced" condition. Commentors also pointed out that the Project's ability to export in June was generally limited by the Export/Inflow restriction and that exports could be artificially increased at the expense of inbasin water users through additional storage release.

The apparent conflict created by supplemental water and surplus Delta outflow existing in the same month was recognized in the analysis of Alternatives 3 and 4. This is documented on pages A3-05 and A3-13 of Volume 2, the Appendix. The apparent anomaly occurs most frequently in June, but is also seen in September, October and occasionally in the late winter and early spring months. In months other than June, storage releases were made for flood control purposes and supplemental water values were not assigned. In June, the DWRSIM Study 469 indicates that during the 34 years in question, Shasta and Folsom were always being operated to meet Delta objectives, whereas with the exception of 1986, Oroville storage releases were being made to support pumping at Banks. Our interpretation of the dual SW/surplus outflow condition was that the Delta was in surplus for part of the month and in balance for the remainder of the month. This is not only possible, but likely. An examination of the historic dates on which Term 91 is triggered indicates that the Delta frequently enters balanced conditions around June 15. Term 91 becomes effective only when two conditions exist: 1) the Delta is in balance, and 2) exports plus carriage water subtracted from project reservoir storage releases plus Trinity River imports yields a positive number. In actual practice, as both conditions must exist simultaneously, water right holders would never be assigned a SW obligation as long as there were surplus conditions.

The commentors argue that the analysis of Alternatives 3 and 4 is flawed because a correction for surplus outflow was not made, and the amount of SW allocated to upstream parties was on average 133 thousand acre-feet (TAF) too great during the 34 years. During the same years, there is an unallocated project obligation of 106 TAF. Thus, even if the commentors premise were correct, there would be little net change to the analysis. Furthermore, if the commentors premise were correct, the DEIR would have overstated the potential impact to water right holders.

The final issue raised by the commentors involves a hypothetical increase in storage release to support increased Delta export. As the E/I ratio is the water quality objective which tends to control the amount of water which may be exported in June, the projects could, in theory, release 100 units of water from storage in order to recapture 35 units of water at the export pumps, thus increasing the storage release term in the Term 91 calculation and the amount of SW to be allocated among parties. The DWRSIM model attempts to optimize project operations and would not operate in this manner unless specifically programmed to do so. In practice, the projects would also not operate in this way in a routine fashion.

Comment: [page 15] The DEIR discussion of Delta calculations for Flow Alternative 3 indicates that the watershed protection statutes apply. The DEIR should make clear that these statutes were not intended to assign responsibilities for achieving Bay/Delta objectives by disproportionately burdening either the San Joaquin River Watershed or the Sacramento River Watershed. Instead, a hydrology-based apportionment of responsibility, with all watershed and county of origin needs being met consistent with previous or future water right applications before export uses could occur, would be most consistent with existing state law, previous SWRCB practice, and the Bay/Delta "Principles Agreement." (Shasta CWA)

Reply: The watershed protection statutes afford inbasin water users an opportunity to perfect water rights with a priority which is senior to the project's Delta exports. This has the effect of gradually reducing over time the amount of water which is available for export. These statutes were not intended to assure inbasin water users the right to divert SWP and CVP stored water.

Comment: [page 15] The DEIR indicates that Term 91 treats the Delta Watershed as if it is a fully interconnected basin below the foothill reservoirs. The FEIR needs to better define the ambiguous references to "watershed" and "basin". (Shasta CWA)

Reply: Term 91 does not distinguish between subregions of the Delta watershed with the exception that those areas lacking hydrologic continuity are not subject to the term.

Comment: [page 15] The DEIR discussion of Term 91 "in-basin entitlements", should be clarified to make clear the intended meaning of the references to both "in-basin" as previously commented on, and "entitlement". With respect to the latter term, the DEIR should refer to existing and inchoate water rights, including those resulting from Water Code Sections 11460 and 10505 et seq., as ongoing and potential "entitlements". (Shasta CWA)

Reply: The text on page IV-15 quotes the exact language from Term 91 and should not be modified. Whether and to what extent "inchoate " rights exist under the watershed and county protection statutes is a legal issue which may be addressed in the water right hearing

Comment: [page 16] Where is the supporting data for the calculation of the direct diversion (DD) term? Appendix 3 merely shows the DD terms themselves without any supporting data. (SJRG)

Reply: CEQA does not require that every number in a complex calculation be included in an EIR. In general, an amount of irrigated acreage was attributed to each direct diversion water right and a monthly depletion calculated for that right. When the monthly depletions are aggregated by priority group, the table found on page A3-16 of Volume 2, the Appendix, is formed. The supporting table has been added to Volume 2, the Appendix.

Comment: [page 16] The SWRCB's modeling approach assumes that all Sacramento Valley inbasin users are placed ahead of all other water rights in the Bay/Delta watershed, regardless of the priority of the inbasin water user. Water users on the San Joaquin River, because the SWRCB has determined that there are no export projects in the basin, have to make releases of water so that the export projects can continue to meet Sacramento Valley inbasin needs and to export water from the Bay/Delta. This approach violates the priority system which is the primary mechanism for allocating water in California. (SJRG)

Reply: The project inbasin obligations (IO term) are calculated separately for the Sacramento, Feather and American rivers. Though the IO term is calculated by watershed, the Projects may meet their IO obligations by storage release from a reservoir of their choosing. It is true that under Alternatives 3 and 4 storage releases are made from New Melones to satisfy the Friant Project's obligation. This has been the historical practice of the USBR and is the most likely operation, as the USBR owns both facilities. The statement that "water users on the San Joaquin have to make releases of water so that the export projects can continue to meet Sacramento Valley inbasin needs and to export water from the Bay/Delta" is untrue.

Section F.1.c. Vernalis Calculation for Flow Alternative 4

Comment: [page 19] The DEIR states that deliveries to the Exchange Contractors are usually made from Sacramento River sources. (See, e.g., page VI-131.) This is referenced as an exchange. On the other hand, these are exports from the Sacramento River basin which must be eliminated before any reductions are imposed on Sacramento basin and watershed water users. (BSWA)

Reply: The deficiencies imposed on the CVP Exchange Contractors are the same as those applied to the Sacramento River Settlement contractors. Though their deliveries are made from the Delta through the exchange agreement, they retain their underlying inbasin rights to the San Joaquin River.

Comment: [page 19] Again, SDWA hopes that the Board will allow the public to explore the notion of Friant obligations being met through New Melones releases. It does not appear to add anything to the analysis to first calculate Friant's share if it is then assigned to New Melones. (SDWA)

Reply: The purpose of calculating the USBR's obligation at Friant Reservoir was two-fold. First, Friant obligations had to be calculated separately from New Melones obligations because the permits for the two reservoirs have significantly different priority dates. Second, although for modeling purposes it was assumed that the USBR would meet its obligations at Friant with releases from New Melones, the USBR could choose to meet the obligation through water purchases or recirculation. In order to provide decision makers with information, the obligations were individually determined.

Comment: [page 19] The DEIR states that the Exchange Contractors "executed a contract with the CVP to receive water from the Delta in exchange for their San Joaquin River water." This is erroneous; the exchange contract defines "substitute" water as water from "any source." Moreover, under Vernalis Calculation for Flow Alternative 4, it is unreasonable to assume that unmet demands of the Exchange Contractors will be met with diversions from the Delta. The Exchange Contractors have riparian and pre-1914 appropriative water rights on the upper San Joaquin River which they agreed to exchange for a substitute supply of water. From a water rights perspective, if water is released from Friant Dam to meet the Exchange Contractors demands before exports are made to the Friant Service Area, there is no basis for meeting demands of the Exchange Contractors with water diverted from the Delta. (WWD)

Reply: The text of the EIR has been changed to reflect the first two sentences of this comment. The assumption in the conceptual model under Flow Alternative 4 that unmet demands of the Exchange Contractors from the San Joaquin River are met from diversions from the Delta was made as an accounting tool. This assumption allowed the use of DWRSIM export to calculate supplemental water without amendment. An equivalent assumption would have been that the Exchange Contractors do not receive any water from the Delta, but the export demand does not change because other exporters are able to use the water. The assumption stated in the EIR should not be construed as a policy statement concerning the Exchange Contractors water rights.

Comment: [page 19] The statement is made that the Exchange Contractors "have riparian and pre-1914 appropriative water rights on the upper San Joaquin River, but they executed a contract with the CVP to receive water from the Delta in exchange for their San Joaquin River water." This is not totally correct. The Exchange Contractors did execute the Exchange Contract with the USBR to receive water form the Delta; however, they did not "give up" their San Joaquin River entitlement. The Exchange Contract merely recites that the Exchange Contractors agree not to exercise their rights upon the San Joaquin River so long as they receive a substitute water supply delivered by the USBR from the Delta or other sources. (SJRECWA-1A)

Reply: The text on page IV-19 has been edited to read: "..These contractors have retained their riparian and pre-1914 appropriative water rights on the San Joaquin River, but they executed a contract with the CVP to receive water from any source, including the Delta, in exchange for exercising their San Joaquin River water rights."

Section F.1.d. Delta Calculation for Flow Alternative 4

Comment: [page 21] In the event that the Exchange Contractors were to return to the river, a much higher quantity of water could be diverted than is established under the Exchange Contract. Therefore, it is erroneous for the DWRSIM Model for Alternative 4 to be based on the Exchange Contract quantity. (SJRECWA-1A)

Reply: The commentor is concerned that the face value of the Exchange Contractors water rights, as set forth in the Miller & Lux Purchase Contract, is greater than the annual limitation in the Exchange Contract. The commentor believes that Exchange Contractor deliveries should be based on the Purchase Contract rather than the Exchange Contract. It would appear to be true that the face value of Purchase Contract is considerably greater than the Exchange Contract. However, we disagree that the higher values should be used for the analysis of Flow Alternative 4.

The maximum annual quantity under the Exchange Contract is 840 TAF; average annual deliveries actually made to the Exchange Contractors during the period 1982-1993 were 822 TAF, and never

exceeded 840 TAF in any single year. Therefore, 840 TAF appears to be sufficient to fully irrigate the Exchange Contractor service area. In our modeling we assumed that if the Exchange Contractors were exercising their San Joaquin River rights, diversion should be limited to the inflow to Millerton Lake minus riparian demand between Friant and Mendota Pool. Under no circumstances could the Exchange Contractor water rights be greater than the available natural flow.

The modified Exchange Contractor deliveries were calculated so that exports through the Friant Kern Canal could be corrected for inbasin obligations of higher priority. If we had used the higher values for Exchange Contractor deliveries suggested by the commentor, then water would rarely have been available for export and the Exchange Contractors would be claiming more water for themselves than they could put to beneficial use. Clearly, during periods of high flow there is sufficient water in the system to fully satisfy the Exchange Contractor's irrigation demand and some amount of export. In drier periods, Exchange Contractor diversions frequently reduce the amount of water available for export to zero.

Section F.2.a. Calculation of Stream Depletions Due to Diversions, DD Calculation

Comment: [page 22] The modeling assumptions for implementation of the DEIR Flow Alternatives 3 and 4 are unclear and probably flawed. Under the discussion of the calculation of the DD term (depletions from direct diversions for water right holders without contracts with either the CVP or SWP), the following statement is made: "For applicants with multiple rights, diversions are assumed to occur first under the senior right until the full face value of the right is exhausted." The DEIR discussion preceding this statement indicates irrigated acreage is the basis for determining the diversion, and makes no reference to the concurrent availability of local flow. The DEIR reliance on estimated diversion demand without regard to local flow when curtailing by the full face value of a right could result in over-estimated yield from curtailment. The DEIR should include example applications of the process that is based on these assumptions. (YCWA-1A)

Reply: If the water generated by water right curtailment had been based on the full face value of the right, without regard to local flow, then the commentor would be correct. However, the water generated by water right curtailment was calculated as a depletion, based on consumptive use factors developed by the DWR and irrigated acres reported by the parties to the SWRCB. Therefore the DD term reasonably represents the amount of water which would be added to the stream system.

Comment: [page 22] The DEIR identifies factors for non-recoverable losses of 10% for diversions on the valley floor and 15% of diversions on the rim areas. The explanation is not clear as to what these percentages cover. (SVWU)

Reply: The non-recoverable loss factors used in the DEIR are functionally the same as the "irrecoverable losses" defined in DWR Bulletin 160-93. They include water lost to a salt sink or lost by evaporation or evapotranspiration from a conveyance facility, a drainage canal, or in fringe areas.

Section F.2.b. IO Calculation

Comment: [page 22] There is no discussion of the DEIR's methodology for curtailment of storage diversions. Discussions with SWRCB staff and review of the DEIR storage curtailments demonstrate that the storage priorities are misapplied. The exact method is unclear. Under the apparent DEIR analysis, the senior right is only activated either when reservoir storage drops below the respective

permit allowance for storage or when storage has dropped an amount equal to the junior right. Storage permits speak to annual allowances; therefore, storage rights should be applied annually with the most senior right to be the first applied and then supplemented by junior rights as available flow permits. (YCWA-1A)

Reply: Diversions to storage in a given reservoir can occur under a variety of different priorities. The assumption used throughout the analysis for Flow Alternatives 3 and 4 is that the last water into a reservoir is the first to flow out. Therefore, the assumption used in the modeling is that water is stored under the senior right first but released from the reservoir in the order of junior first and senior last. In the Central Valley, there are many large reservoirs built on top of small older reservoirs. If the senior rights had been adequate, there would have been no need for the new reservoirs.

Comment: [page 22] Using the Tehama-Colusa Canal as the basis for delivery patterns to establish the current inbasin obligation with the time frame of 1982-1989, less 1983 (exceptionally wet year) is misleading. The Tehama-Colusa Canal is the newest canal system of the CVP. The Canal's service area was just developing in the early 1980's. Several Irrigation Districts within the service area were not able to obtain their promised contract water amounts due to a moratorium on additional deliveries in 1979, even though water supply commitments were made and facilities financed and installed based on the promised amounts of water. Other contractors who received full amounts are still developing their Districts' service areas and infrastructure. The six year period used in this analysis does not constitute a true delivery pattern for this service area. Using the last three years (1994-1996) would present a much more accurate picture. (TCCA)

Reply: If the SWRCB employs this methodology in the preferred alternative, the 1994-1996 period could be used to establish the monthly distribution of Sacramento basin project water deliveries.

Comment: [page 22] Last paragraph. The DEIR states that "deficiencies are applied first to project entitlement up to a maximum of 50%, then to base entitlement up to 25%." This statement is in error for Sacramento River Settlement Contractors. The deficiencies in those contracts is a maximum of 25% for both base supply and project water, based on inflow to Shasta Lake. (SVWU)

Reply: Deficiencies were applied as described in the comment. The text has been revised.

CHAPTER V. WATER SUPPLY IMPACTS OF THE FLOW ALTERNATIVES

Comment: Much of the analysis in this chapter depends upon the Delta requirement or the Delta outflow requirement. There needs to be a discussion either here or in Chapter IV of how the required Delta flows are determined and if they are different among alternatives. (USDOI)

Reply: The minimum Delta outflow requirements are specified in the 1995 Bay/Delta Plan and included in Chapter II as Tables II-1 through II-4. The DWRSIM model runs were generally designed to meet Bay/Delta Plan objectives. Accordingly, there is very little variation among alternatives for minimum required Delta outflow.

Comment: Although the Watershed Protection Act would, on its face, appear to require the Projects to sell water to diverters in the Sacramento Basin, many diverters in the Basin are not on the streams into which CVP or SWP releases would be made. Does the EIR assume that the two Projects can be required to release exchange water to diverters on tributary streams who are curtailed, so that they could continue to make direct diversions at their point of diversion (such as the Camp Far West Irrigation District on the Bear River)? Do the SWP and the CVP concur that a diverter on a tributary stream in the Sacramento Basin, who would not be taking the Project water directly, is entitled to buy exchange water to replace the water diverted by him on the tributary. (CFWID)

Reply: The EIR does not say that the projects would be required to sell water to parties whose diversions are curtailed. However, correspondence with the DWR indicates that it is willing to discuss contractual arrangements with such parties. The USBR is not executing new contracts at this time but it may issue contracts after the water-right decision is adopted. The assumption is made in the EIR that a party whose diversion is curtailed will enter into a contract with some other water right holder. See response to comment for Chapter II, section E.1.c, page 17 for an explanation of why the assumption was made. If the CVP and the SWP were to contract with parties on tributaries not controlled by the Projects, the contract would be an exchange agreement. Tributary water right holders would continue to divert and an equivalent amount of water would be released for Delta purposes at Shasta or Oroville.

Comment: The transfer of water which has not been historically consumed by the seller either to the environment or for consumptive purposes may result in the further depletion of Bay/Delta waters, rather than stabilizing and reducing existing depletions. The SWRCB should establish an environmental baseline which ensures that (1) transfers which result in increased depletions by the transferee are accompanied by equivalent reductions in depletions by the transferor and (2) transfers (or direct acquisitions) for non-depletive environmental purposes can be used to re-regulate existing supplies lawfully controlled by the transferor and/or to reduce the transferor's (and hence systemwide) baseline depletions. (EDF)

Reply: The DEIR includes average depletions for all water right holders subject to Flow Alternatives 3 and 4. A detailed review of recent depletions will be undertaken of specific projects when transfers are proposed.

Comment: HRIA depends on melting snowpack to provide a summertime water supply. The most intensive use of water is during the period of May through September. We empty our reservoir entirely every year by the end of September. There is no water that is unused.

HRIA is concerned about the impact of the SWRCB's actions and decisions on its water rights. Although HRIA is a small irrigation association, and a minor water user, we critically need the water we are licensed to take. (HRIA)

Reply: Comment noted.

Comment: The failure to incorporate provisions of the CVPIA into the no-action alternative (Flow Alternative 1) results in a significant overestimate of water supply (and thus related economic) impacts. (EDF)

Reply: Comment noted. See the general comment in Chapter 5 on inclusion of CVPIA conditions in the Base Case. Also see general comment for Chapter II, section D, page 13.

Comment: In general, the Supplement is difficult to read and would be greatly strengthened if it were less disjointed. It would be very helpful if tables and analyses of water supply impacts in Chapter V included columns for the impacts under Joint Point of Diversion Alternatives 8 and 9. (SLDMWA-2)

Reply: To include Joint Point Alternatives 8 and 9 in a table along with Flow Alternatives would be very misleading. The Joint Point Alternatives constitute a related but independent project.

Comment: [page 01] The DEIR states that the water supply impacts to the export diversions are calculated for two different hydrologic scenarios: 1) the average annual impacts based on the historic 73-year period; 2) the average annual impacts based on the critical dry period of May 1928 through October 1934. These analyses are inadequate to determine the potential impact to a single water right holder in the Sacramento Valley. (SVWU)

Reply: With the exception of the SWP and the CVP, Alternatives 2, 6, 7 and 8 will not impact Sacramento Valley water right holders because the DWR and the USBR alone are responsible for meeting the flow objectives. Alternatives 3 and 4 affect many water right holders in the Sacramento Valley. To assess impacts to these water users, bar charts are provided in Figures V-22 through V-30 to show the frequency with which specific water right holders must curtail diversions for the different months. Alternative 5 impacts the water supply of the major reservoirs on the Sacramento River and its tributaries. Alternative 5 impacts a relatively small number of water right holders including the DWR and the USBR.

Comment: [page 01R] Flow Alternative 8 does not mention the DO standard. Does the modeling show that this standard will be met if Alternative 8 is implemented? (Stockton-2)

Reply: The SWRCB has included in the FEIR the results of modeling the sensitivity of DO to changes in flow. This analysis indicates that DO concentrations during the late summer and early fall are not strongly dependent upon flow. As stated in the fourth paragraph on page X-28, there is a

seasonal trend of low DO even at high flow conditions and other parameters have significant effects on DO as well. It may be unreasonable to use flow to control DO concentrations.

The SWRCB set both flow and DO objectives on the San Joaquin River. The SWRCB did not envision that flows in excess of the flow objectives would be used to meet the DO objective. Because the principal parameter over which the signatories to the San Joaquin River Agreement (SJRA) have control is flow, the SJRA signatories are not assigned responsibility to meet the DO objectives.

Section A. WATER DELIVERIES

Comment: [page 01] Analyze the impact of the proposed alternatives on water deliveries, overdraft and subsidence potential in Yolo County separately, without reference to the Delta region or Solano County, so that an accurate estimate of environmental effects can be determined. (Woodland, WRAYC)

Reply: The EIR accurately reports on the environmental effects in Yolo County. To summarize the document, Alternatives 3 and 4 would require the curtailment of direct diversions or diversions to storage of post-1914 water right holders in the county. Alternatives 2, 5, 6, 7, and 8 would result in no water delivery reductions in Yolo County. Thus, no impacts are expected from implementing Alternatives 2, 5, 6, 7 and 8

The frequency of the diversion curtailments under Alternatives 3 and 4 depends on the priority of the water rights exercised in Yolo County. Aquatic resources habitat, vegetation and wildlife, channel erosion, land use, urban development, energy, recreation, cultural resources and groundwater overdraft and water quality are not expected to be adversely impacted in Yolo County due to these diversion curtailments.

Pumping groundwater to replace curtailed direct diversions could contribute to the subsidence problem in Yolo County, especially during extended droughts. This problem could be avoided by replacing curtailed direct diversion with stored water, or through conservation, water transfers, or regulatory limits on groundwater pumping.

Comment: [page 01] Separate computer simulations were used to analyze the impact of Alternative 5, without any discussion of the compatibility or integration of these models. The HEC 3 model, which was used to reach conclusions about the potential impacts on the Bear River system, was not described in sufficient detail to enable a critical examination of its applicability, assumptions and application in the DEIR. The HEC 3 model is described as showing substantial diversion reductions through the Bear River Canal, the impacts of which were not considered due to an assumption that water will be available from other sources, including groundwater. PCWA relies on water from the Bear River Canal for nearly all of its municipal supplies, to serve areas in which groundwater is largely inadequate for such purposes. The assumption that other water supplies are available is unsupported in the DEIR, and should be reconsidered. (PCWA-1)

Reply: Additional information regarding Alternative 5's methodology has been added to the EIR in section H of Chapter IV. Additional detail on HEC 3 modeling is included as in Volume 2 as Appendix 4.

Placer County Water Agency could contract for water required to meet its share of responsibility for meeting the Plan objectives if groundwater supplies are insufficient. PCWA also holds appropriative

rights to divert 120,000 AFA from the Middle Fork of the American River and is in the early stages of constructing an American River pump station with a year-round water supply of 35,000 AFA.

Comment: [page 01] The discussion relative to the HEC-3 analysis and the reductions of diversions to the Bear River Canal is not clear and should be clarified. (SVWU)

Reply: Additional Information regarding Alternative 5's methodology has been added to the EIR in section H of Chapter IV. Additional detail on the HEC 3 modeling is included as Appendix 4 in Volume 2.

Comment: [page 01] The CAL/FED Impact Analysis Report acknowledges that DWRSIM is inadequate for modeling any groundwater circumstances yet groundwater is an integral part of this base study. Either groundwater is not to be protected or the modeling is inadequate for the task due to limitations and assumptions. Either way, this points out the need for further study before water rights are considered using any of these alternatives unless conjunctive use for out of basin supplemental supplies is removed from the options. (VWPA)

Reply: DWRSIM was not used to model impacts to groundwater resources. Rather, delivery reductions quantified in Chapter V were assumed to be made up through groundwater pumping to effect the greatest impact to groundwater resources. The impacts of replacing delivery reductions with groundwater were then evaluated for the various sub-basins in the study area. Further study of groundwater impacts is not warranted.

Comment: [page 02] As indicated on Page V-2, Alternative 5 significantly exceeds the Delta flow objectives, but further refinement would result in water supply impacts closer to the other alternatives. This caveat should be more widely stated in the DEIR. This problem means that the relatively high environmental values of this alternative should be viewed with caution and that it is probable that if this alternative were refined, as the DEIR suggests, the environmental values would be closer to those of the other alternatives. This, of course, reflects the fact that the objectives are what drive the environmental analysis and if an alternative, inadvertently or by choice, exceeds the objectives, higher environmental values will result. (USDOI)

Reply: Comment noted.

Comment: [page 02] Flow Alternative 6 is not comparable to the other flow alternatives because the CVP and SWP joint points of diversion are in effect. Unless joint point of diversion is included in the other alternatives, the discussion of Flow Alternative 6 conclusions should be removed. (USDOI, SLDMWA, SVWU)

Reply: The comments are correct that Flow Alternative 6, the recirculation alternative, is not directly comparable to the other flow alternatives because Alternative 6 includes joint use of points of diversion in the southern Delta and the other alternatives do not. Joint point of diversion was included in this alternative to reduce the water supply impacts to export contractors caused by the use of the export facilities to meet the Vernalis flow objectives.

Regardless of its direct comparability, evaluating Alternative 6 was important because the recirculation concept was feasible and had proponents among affected water users. The SWRCB is

fully aware of the differences between Alternative 6 and the other flow alternatives and will consider this factor in the forthcoming water right decision.

Comment: [page 02] The calculations to determine impacts of the various alternatives assume that Sacramento Basin water rights holders will contract for supplemental supply while water rights holders on the San Joaquin basin will pump groundwater in the event those rights holders are required to forego diversions. Is this the reason why Tables V-1 and V-2 show fluctuating effects? If the calculations do not assume that there is any decrease in consumption upstream, should not the total effects for any alternative roughly equal to the effects of any other alternative? If there is only so much water upstream every year and the alternatives (excluding Alternative No. 6) anticipate taking sufficient amounts of water from different parties, shouldn't the amount of water taken from all parties under any alternative be roughly equal to the amount taken from other parties under another alternative? (SDWA)

Reply: Overall, the water delivery changes among the alternatives are similar, especially during the critical period. Alternative 5 has the lowest average deliveries because Delta outflow is higher than under the other alternatives, resulting in reduced diversions. Alternative 7 average deliveries are reduced because the allocation formula for New Melones Reservoir restricts deliveries to Stockton East Water District and Central San Joaquin Water Conservation District. Alternative 8 average deliveries are reduced because the VAMP reduces exports during the spring pulse flow. Alternative 6 has the highest average deliveries because the joint use of points of diversion is authorized under the alternative.

Comment: [page 02] The DEIR assumes that when a direct diversion is curtailed, "the water right holder can either contract for a supplemental supply or pump groundwater". This assumes that suitable groundwater is available. This is not the case in the areas served by Tudor Mutual Water Company and Garden Highway Mutual Water Company, nor is it true within the Camp Far West Irrigation District. (CFWID)

Reply: Comment noted. In this case, the affected agencies will need to contract for a supplemental supply or contract to have another party provide water to meet those obligations.

Comment: [page 02] The second sentence of the last paragraph needs to clarify that limited joint point of diversion occurs in the base case flow alternatives as allowed under D-1485 to recover fish constraints in April and May. (DWR)

Reply: Condition 3 of D-1485 allows limited use of the joint point of diversion in May and June to recover pumping foregone for the protection of striped bass. As modeled in DWRSIM, this pumping is recovered in August. Chapter II of the FEIR will be amended to mention the limited use of joint point of diversion in the base case allowed under D-1485.

Comment: [page 02] Last paragraph. Consider adding the statement that Alternative 6 has the smallest impacts because the assumption is made that the SWP export facilities are run full-capacity all summer. (DWR)

Reply: The paragraph referred to in the comment states that Alternative 6 has the lowest reduction in average deliveries for the 73-year period. The paragraph explains that this result should be viewed

with caution because Alternative 6 is the only flow alternative that includes combined use of SWP and CVP points of diversion in the Delta. The change requested in the comment appears redundant.

Comment: [page 02] Regarding the water supply impacts of implementing Alternative 5, we agree with the DEIR's finding that "further refinement of this alternative would result in modeled water supply impacts closer to those of the other alternatives", and therefore conclude that the modeled water supply impacts should not be overly relied upon as a factor in the SWRCB's final determination. Furthermore, we believe that increased conservation, conjunctive use, exchanges, groundwater management and other measures can adequately mitigate water supply impacts of Alternative 5 to the Friant Unit and other water users. Indeed, both the range of measures available for mitigation and the degree to which these measures can be implemented is consistently underestimated by state efforts to implement the Agricultural Water Suppliers Efficient Water Management Practices Act and the San Joaquin Valley Drainage Program and federal efforts to implement the Reclamation Reform Act and relevant portions of the CVPIA. Such under-represented and/or under-utilized measures include basic agricultural water conservation measures (such as water measurement, volumetric pricing, and on-farm programs) and methodologies (cost-benefit analyses that address marginal/avoided costs, environmental externalities, and cost-sharing); compensated retirement of drainage problem lands (authorized under both the CVPIA and the San Joaquin Valley Drainage Relief Act but as yet practically unimplemented); and water recycling (including the implementation of regional recycling initiatives). (BISF)

Reply: Comment noted. The SWRCB agrees that these measures can mitigate for water supply impacts. These measures are discussed in Chapter XII, section B.

Comment: [page 02] Why does storage in New Don Pedro Reservoir increase under Flow Alternative 7 when releases from the reservoir increase? The SWRCB should reevaluate the use of DWRISM, and if necessary, do additional studies that more accurately reflect the environmental consequences of its proposed alternatives. (SJRG)

Reply: The example cited in the comment resulted from using a different approach to model the FERC instream flow requirements on the Tuolumne River than the approach used in modeling the other alternatives. The change in approach was recommended by a technical consultant from the San Joaquin River Group. This discrepancy was not caused by an internal problem with DWRSIM and does not justify additional studies. As discussed in Chapter V, the effect of Alternative 7 on New Don Pedro Reservoir is small.

Comment: [page 02] The DEIR does not acknowledge or evaluate the risk of a call on San Joaquin River water by the San Joaquin River Exchange Contractors resulting from any increased probability that the USBR will be unable to satisfy its contractual obligations to the Exchange Contractors. (FWUA)

Reply: The DEIR analyzes the potential impacts to CVP deliveries to the Exchange Contractors (see Table V-1). Under all alternatives, average CVP deliveries to the Exchange Contractors would be decreased from the base case by 7 to 24 TAF. The greatest actual delivery to the Exchange Contractors in the period 1982-1993 was 840 TAF. The average delivery under all alternatives is enough to satisfy this demand. Under average conditions, there will be no need for the Exchange Contractors to call on Friant water.

Under the worst case scenario, water year 1977, deliveries to the Exchange Contractors under Flow Alternative 2 would be reduced by 309 TAF, for a total delivery of 384 TAF. Although the 1977 delivery is significantly less than current Exchange Contractor average demand, but it also will not lead to a call for water from Friant. The Exchange Contractors water rights apply only to the amount of natural flow in the San Joaquin River. In 1977, the inflow to Millerton Lake was 376 TAF. In this year, the Exchange Contractors Delta supply would have been greater than the amount available under their rights from the river. Therefore, they could not have made a call upon water at Friant.

Comment: [page 02R] The nature of the error in the initial modeling results for Alternative 5, and the change in the subsequent DEIR, should be explained. (CVCC, FWUA, Stockton)

Reply: The original modeling of Alternative 5 did not correctly account for Friant/Kern canal diversion cutbacks and resulted in excess flow below Friant Dam and at Mendota Pool. Therefore, the original results did not correctly convey the water supply impacts, or the presumed instream flow benefits of the alternative. The differences between the model runs is readily seen by comparing Tables V-1 & 2 and Tables VI-21 & 22 of the Draft (Vol 1) and Revised DEIRs (Vol 4).

Comment: [page 02R] The DEIR does not provide enough details to examine the possible advantages of Alternative 6. What were the specified Vernalis flows and simulated DMC releases (monthly and annual values)? It appears that this alternative could be used to satisfy the Vernalis salinity objectives rather than rely on New Melones releases. Could this alternative also be used to increase flows at Vernalis when upstream water quality was poor (high nutrients and algae concentrations) or when dissolved oxygen concentrations were approaching the DO objectives? Did the modeling of Alternative 6 take these possibilities into account? (Stockton-2)

Reply: The 73-year average monthly DMC releases under Alternative 6 are as follows: Oct - 158 cfs, Nov - 0 cfs, Dec - 0 cfs, Jan - 0 cfs, Feb - 21 cfs, Mar - 55 cfs, Apr - 414 cfs, May - 737 cfs, Jun - 249 cfs, Jul - 180 cfs, Aug - 107 cfs, Sep - 0 cfs (117 taf annually).

This alternative could potentially be used to increase Vernalis flows when water quality is poor. Figure V-14 of the DEIR shows that approximately 499 TAF of transfer capacity is available between July and October (based on a 72-year average) that could potentially be used for recirculation if water is available for export and if export capacity exists at the export pumps. A drawback of using export water for salinity control rather than water from New Melones Reservoir is that substantially more water is needed for dilution purposes because export water has a higher salinity.

Alternative 6 requires the use of recirculation water to meet Vernalis flow and consumptive use requirements in the southern Delta. The use of recirculation water for any other purpose is not analyzed.

Comment: [page 02R] The statement is made that the other flow alternatives would have smaller 73-year period average delivery reductions than Alternative 6 if they also included combined use of points of diversion. Please explain how the combined point of diversion can have such a substantial effect. What would be the results if the other alternatives also had the combined point of diversion or if Alternative 6 didn't have it? (Stockton-2)

Reply: Joint use of points of diversion in the southern Delta has a substantial effect on exports and water deliveries south of the Delta because the "joint point" provisions allow the CVP to use the

pumping capacity of the SWP and vice versa. If the other flow alternatives included joint point provisions, as modeled in Alternative 6, the water supply impacts of implementing those alternatives would be lessened. If, like the other flow alternatives, Alternative 6 did not include the joint point provisions, the water supply impacts of Alternative 6 would be substantially greater than reported in Chapter V. The magnitude of the additional exports that can be achieved through use of the joint points of diversion can be found in Chapter XIII.

Comment: [page 03] The delivery impacts for the east side of the San Joaquin Valley as given in Chapter XI are inconsistent with information in Chapter V. Examples include delivery reductions for the Merced, Modesto, Turlock, Oakdale and South San Joaquin Irrigation Districts, and for eastern San Joaquin County. (CDWA, SJRG)

Reply: Tables V-1 and V-2 are not directly comparable to Table XI-2 because delivery reductions are grouped differently in the two tables. For example, in Table XI-2, Merced-Madera includes Merced Irrigation District, Madera Irrigation District, Chowchilla Water District and Gravelly Ford Water District while Table V-1 and V-2 display Merced ID, Chowchilla ID and Madera ID separately and do not include Gravelly Ford.

Regarding impacts to eastern San Joaquin County, note in Table XI-1 that Region G, not Region E, includes the Stanislaus River water rights. Southeast San Joaquin County and most of Stanislaus County are in Region G.

Additionally, the water delivery impacts for Table XI-2 were grouped into three year types; low delivery, medium delivery and high delivery years. Table V-1 and V-2 display the delivery changes based on the 73-Year Period and Critical Period annual averages respectively. Accordingly, the values from Table XI-2 should be different than those of Tables V-1 and V-2.

Comment: [page 03] It appears that the SWRCB staff did not capture the potential effect that one year's modified operation for providing flows has upon subsequent year's determination of required supplemental water. The result of this flaw is that the timing and magnitude of required supplemental water is, at times, in error, and thereby affecting the identification of responsible parties and the frequency with which they are responsible for providing supplemental flows. In particular, if this flawed approach was applied to simulated New Melones operations, then the flows necessary to meet the Vernalis objectives would be in error and the subsequent allocation of responsibility for those flows would also be in error.

The results of the figures beginning on page V-12 are in error as a result of the analysis flaws described above. (SJRG)

Reply: One year's modified operation of project reservoirs should have no effect upon a subsequent year's determination of required supplemental water. A subsequent year's supplemental water requirement is driven by the controlling water quality objectives in that year and hydrologic conditions. It is true that modified operations could result in different storage levels in project reservoirs. However, the Term 91 method utilizes storage releases, not storage levels, to quantify supplemental water.

The approach used to calculate supplemental water is sound and Figures V-12 through V-21 are not in error as suggested.

Comment: [page 03] The analysis of the impacts of delivery reductions south of the Delta is inadequate. The DEIR analyzes the water supply and environmental effects of the flow alternatives in Chapters V and VI respectively. While the DEIR estimates specific annual average delivery reductions for CVC contractors under each of the alternatives (Tables V-1 and V-2), the resulting impact analyses fail to identify and consider the economic, sociological, and environmental effects of these potential reductions in deliveries as they specifically relate to CVC contractors and service areas. (CVCC)

Reply: CEQA does not require an agency to perform analysis to the level of detail requested by the commentor. The economic impacts are adequately analyzed in Chapter XI as are the environmental impacts in Chapter VI of the DEIR.

Comment: [page 03] Tables V-1 and V-2 would be improved by including a column for simulated Alternative 1 deliveries. (Stockton)

Reply: Tables V-1 and V-2 have been modified as you suggested.

Comment: [page 03] The water delivery changes to Stockton-East Water District & Central San Joaquin Water Conservation District from New Melones reservoir are shown in Tables V-1 and V-2 on page V-3. The higher reduction of deliveries under Alternative 7 compared to Alternative 2 seems incorrect, in that Alternative 7 is described in the DEIR as being "similar to Flow Alternative 2, except that some water is provided by other parties to meet the Vernalis flow objective". (II-34.) With contributions by others to Vernalis flows, the downstream demands on New Melones would appear to be reduced, hence the water deliveries to Stockton-East Water District & Central San Joaquin Water Conservation District should be greater under Alternative 7 than Alternative 2. Is there an explanation for this seemingly incongruous result?

Also, does the indicated change in deliveries to the Stockton-East Water District & Central San Joaquin Water Conservation District from New Melones Reservoir assume deliveries of certain quantities of water under the base case in the model? If so, what were the assumed base case deliveries of water to the two Districts? (CFWID)

Reply: A column has been added to Tables V-1 and V-2 showing the base case deliveries for the listed service areas. This column shows the combined base case deliveries to the Stockton-East Water District and the Central San Joaquin Water Conservation District. DWRSIM lumps the deliveries to these two districts.

The base case deliveries provide an explanation for the larger impact for the 73-year period versus the critical period for Alternative 7. Under the base case and Alternative 7, actual deliveries for the 73-year period are 107 TAF and 23 TAF respectively. Actual deliveries for the critical period are 38 TAF and 8 TAF respectively. Although the actual deliveries are significantly reduced for the critical period compared to the 73-year period, the impact (defined as the difference between the alternative and the base case) is greater for the 73-year period.

The reductions in Alternative 7 are higher than Alternative 2 because Alternative 7 uses a different operations plan for New Melones and a less generous allocation formula for deliveries to CVP contractors from New Melones.

Comment: [page 03] There are no supporting data in the EIR or or Volume 2 of the Appendixes showing how the water delivery changes in Tables V-1 and V-2 were calculated. The EIR is deficient because it presents only the SWRCB's conclusions without any supporting analysis or meaningful detail. (SJRG)

Reply: The information in Tables V-1 and V-2 for the most part come from standard DWRSIM output tables of monthly "actual deliveries." The long-term and critical period annual averages were calculated from these tables. The exception is the data on delivery reductions for the Yuba and Bear River System, which was modeled by the DWR using a HEC 3 hydrologic model. The DWRSIM output tables are available on the DWR website. The HEC 3 model output is available either from the SWRCB or the DWR.

Comment: [page 03] The DEIR provides very little information and the technical appendices contain no information on the basis for the Flow Alternative 5 analysis. The only data provided are the allocation of Delta flow objectives by watershed and by water year type as well as brief tables on delivery deficiencies for the Flow Alternatives (Tables V-1 and V-2). According to Tables V-1 and V-2, some of the largest reductions in water deliveries would be on the Yuba and Bear River systems; however, no carryover storage information is presented for New Bullards Bar Reservoir, as is calculated for other selected reservoirs in the DEIR. Given the statement "The HEC 3 model results provide information on delivery impacts on the Yuba and Bear rivers for Flow Alternative 5," it would seem that New Bullards Bar Reservoir carryover storage impacts were calculated when the DEIR was prepared. The supporting data and assumptions for the allocation of flow requirements and HEC-3 results for New Bullards Bar Reservoir should be added to the DEIR so the reader can assess the accuracy of the modeling for Flow Alternative 5. (YCWA-1A)

Reply: See response to comment for Chapter V, section B, page 4. Additional Information regarding Alternative 5's methodology has been added to the EIR in section H of Chapter IV. Additional detail on HEC 3 modeling is included as Appendix 4 in Volume 2.

Comment: [page 03] The information presented in the DEIR indicates that a substantial reduction in water deliveries for the Yuba River would occur under Flow Alternative 5. In Table V-2, titled "Water Delivery Changes, Critical Period Annual Average," the reduction for the Yuba and Bear River system is estimated to be 150 TAF. Although at face value this reduction would cause a substantial impact to the YCWA and would likely have wide-ranging impacts, including environmental impacts to river temperature and waterfowl habitat, these impacts are not discussed in the DEIR. Results are only cited for a combination of the Yuba and Bear Rivers. Again, having modeled the impacts, the DEIR should list the discrete impacts to each of these basins so that each affected entity in these river systems can assess the respective impacts. (YCWA-1A)

Reply: The amount of water delivered under the base case and Alternative 5 was modeled using a HEC 3 model of the Bear/Yuba River system. Alternative 5 was compared to the base case for both the 73-year period and the critical period. The calculated delivery impacts for the Bear River during the 73-year period and critical period are -57 TAF and -108 TAF respectively, and for the Yuba River -45 TAF and -90 TAF respectively. These results have been included in Tables V-1 and V-2.

Regarding impacts to river temperature and wildlife habitat, these impacts were evaluated for the Feather River. However, due to lack of data and appropriate analytical tools, Feather River tributaries were not analyzed. Impacts evaluated for the Feather River should be representative of impacts on its

tributaries. Please see Chapters VI and XIII of the FEIR for a discussion of river temperature and wildlife habitat impacts.

The reduction in water delivery from the Yuba River can be supplemented with available groundwater in Yuba County Water District's service area.

Comment: [page 03] It should be noted that while this document uses the critical period of 1928-1934 for the entire Central Valley, this is not the true critical period for the San Joaquin River Basin. The true critical period for San Joaquin River Basin is the most recent drought, 1987-1992. Therefore impacts for the 1928-34 critical period are an understatement of what the impacts of the most adverse historical period would be. The storage levels shown for the reservoirs in the San Joaquin Basin are overstated because of the choice of critical period to examine. (USDOI)

Reply: The most severe drought in the San Joaquin Basin occurred during the 1987-1992 period. However, the most severe drought in the Sacramento Basin occurred during the 1928-1934 period. The 1928-1934 drought was used in the EIR as the critical period for both basins because using a single critical period was less confusing than using two periods, and because some water supply factors, such as exports, transfer capacity and Delta outflow, depend on inflow from both basins.

The comment is correct that the carryover storage volumes for reservoirs in the San Joaquin Valley would be lower if the 1987-1992 period were used in the critical period analysis. However, for the purpose of comparing alternatives, use of either critical period results in the same trends. In fact, for San Joaquin Valley reservoirs, the differences in carryover storage between the alternatives and the base case are greater for the 1928-1934 drought. Thus, for the purpose of determining the relative impacts of the alternatives, using 1928-1934 as the critical period is appropriate.

Comment: [page 03] Why does the Merced Irrigation District critical year water deliveries in Table V-2 increase under Alternative 5 compared to Alternative 1? (SJRG)

Reply: The Alternative 5 critical period increase in deliveries reported in Table V-2 is only 1 TAF. This increase is a rounding error in the model. The lack of a delivery impact to the Merced Irrigation District must be considered in the context of the carryover storage impact in Lake McClure, which is substantial. Basically, the model met demand in the Merced Irrigation District by making releases from Lake McClure at the expense of carryover storage. Under Alternative 5, the 1 TAF of increased deliveries is insignificant compared to the carryover storage impact of -211 TAF for the critical period.

Comment: [page 03] Tables V-1 and V-2 have been revised to include a column with the heading "Delivery Base Case". Merced Irrigation District's annual average base case delivery is listed as 1343 TAF for the 73-year study period and as 1408 TAF for the 1928 to 1934 critical period. A review of the DWRSIM studies show that in all of the studies an average annual demand of 630 TAF was used for MID. Therefore, it appears that the study results are correct but that incorrect base case delivery numbers were inserted into the table. (Merced ID)

Reply: Your comment is correct. The "Delivery Base Case" value for MID has been corrected in Tables V-1 and V-2.

Comment: [page 03R] In describing Alternative 8 (see revised DEIR page 1), the DEIR states that if additional water is needed to meet the Vernalis target flows, the San Joaquin River group provides up to 110,000 TAF. The only quantification of the value of up to 110,000 AF is shown in Table V-1 and V-2, which both show zero values for delivery reduction. Those tables do show less of an impact on the State and Federal water projects, but no other agency has been shown to have reduced deliveries. It is impossible to fully evaluate the new Alternative 8 unless the delivery reductions to all agencies are shown, including a quantification of how much of the 110,000 AF is required from the San Joaquin River Agencies and how often. (CCWD-2)

Reply: Water supply impacts to agencies with reservoirs can manifest as either delivery reductions or reductions in carryover storage. The model results show that the Merced, Modesto and Turlock Irrigation Districts can fully meet deliveries and provide the required Vernalis target flows using releases from storage in Lake McClure and New Don Pedro Reservoir. The impact associated with Alternative 8 is reduced carryover storage at the end of the season (see Figures V-7 and V-8) rather than a delivery reduction (Table V-1 and V-2).

A table could be provided showing when and how much water the San Joaquin River Agreement parties supply to meet the Vernalis target flows, however, this information alone does not provide insight into water supply impacts.

Tables V-1 and V-2 show delivery reductions for the agencies for which there are modeling results from DWRSIM. In this respect, the DEIR is limited by the available output from DWRSIM.

Comment: [page 03R] The City of Stockton incorporates by reference the general comments contained on pages 1 through 4 of its comment letter of March 31, 1998. We do note that Tables V-1 and V-2 have been improved to show the deliveries that would be made in the base case (Alternative 1), which responds to our previous comment regarding Alternative 1. (Stockton-2)

Reply: Comment noted.

Comment: [page 03R] The revised DEIR completed analysis of a new flow alternative, Alternative 8, which includes the flows of the San Joaquin River Agreement. Tables V-1 and V-2, however, do not show any reduced deliveries to any of the water agencies on the San Joaquin River. The delivery changes of these agencies on the San Joaquin River are shown as 0 for both the period of record analysis and the critical period analysis. Is the conclusion of the DEIR that the San Joaquin River Agreement will not affect deliveries to any agency on the San Joaquin River? (CCWD-2)

Reply: Tables V-1 and V-2 show that the Merced, Modesto and Turlock Irrigation Districts (parties to the San Joaquin River Agreement) will not experience reductions in average deliveries under Alternative 8 in comparison to Alternative 1. Figures V-7 and V-8 show, however, that deliveries by these agencies are made at the expense of carryover storage. These figures show carryover storage decreasing in Lake McClure and New Don Pedro Reservoir for both the 73-year and critical periods under Alternative 8.

Comment: [page 03R] The DEIR fails to analyze the impacts on the Exchange Contractors and CVP as a whole if Friant Dam releases were to be required to implement the 1995 Bay/Delta Plan. The Exchange Contractors retain rights to San Joaquin River water, and would be within those rights to divert water released from Friant Dam. Those rights (and likely diversions) are acknowledged in

the DEIR's analysis of Alternative 4, but ignored in connection with Alternative 5. More importantly, the foundation of the Second Amended Contract for Exchange of Water would be undermined by Friant Dam releases (particularly the massive releases suggested in Alternative 5), and the impacts on that contract and the CVP at large must be analyzed in connection with any alternative that requires such releases.

Although the Revised Chapters amended Tables V-1 and V-2, it appears that those revisions were the result of the "corrected" modeling for Alternative 5 and that they still do not reflect any impacts resulting from the relationship between the Exchange Contractors and the release of substantial amounts of water from Friant. (FWUA-2)

Reply: Table V-1 and V-2 show that deliveries to the Exchange Contractors are essentially unchanged under Alternative 5 compared to the base case. The minor reductions identified may be caused by modeling noise.

The Second Amended Contract for Exchange of Waters states that the United States agrees "that if the resulting delivery of water would be less than seventy-two percent (72%) of Schedule One in said Purchase Contract then the United States shall make up such quantities by releases of available storage from Millerton Lake." (San Joaquin River Exchange Contractors, Exhibit 6, page 5.) The need to involve this clause under Flow Alternative 5 seems unlikely.

Section B. CARRYOVER STORAGE IN CENTRAL VALLEY RESERVOIRS

Comment: [page 04] The EIR should explain whether New Bullards Bar carryover storage is unaffected under the Alternatives 3, 4 and 5 and the information should be added to the EIR. Regarding Table V-1 and V-2, please break out the delivery reductions on the Bear and Yuba River systems. (DFG, YCWA)

Reply: Carryover storage impacts to New Bullards Bar Reservoir were analyzed using the HEC-3 model for the base case and Alternative 5. The Yuba River System was not analyzed for Alternatives 3 and 4 because the diversion to storage into New Bullards Bar bypassed to meet the Delta flow objectives would be minimal. Table 8 in Volume 2, Appendix 3 of the EIR shows the maximum monthly average bypass for April, May and June to be 1 TAF with the remaining months having no bypass. However, YCWA performed its own analysis on the possible impacts to storage and direct diversions for Alternatives 3 and 4. The results of YCWA analysis of Alternatives 3 and 4, and the HEC-3 modeling of Alternative 5 are discussed below.

In YCWA's analysis of Alternatives 3 and 4, New Bullards Bar Reservoir was assumed to supply the direct diversions curtailed on the Yuba River below the reservoir. YCWA concluded that under Alternatives 3 and 4, the storage impact for the 71-year annual average and the critical period average would be -20 TAF and -38 TAF, respectively. (Only 71 years of data are available.) This result is suspect because of the conflicting information regarding base deliveries. The DWR used a base delivery of 331 TAF in the HEC-3 model, provided to them by YCWA, while YCWA reported 320 TAF of base deliveries for its analysis. In a letter dated April 30, 1997 to Victoria Whitney from Bookman-Edmonston Engineering, YCWA reported an average base delivery of 232.5 TAF from 1980 to 1994. Due to YCWA using a higher base delivery, its estimate of impacts is probably overstated. The HEC-3 results for Alternative 5 delivery reductions on the Yuba River system in Tables V-1 and V-2 probably overstate the impacts as well because the DWR used an even higher base delivery than YCWA. As suggested in the comment, the Bear and Yuba River Systems have been changed to reflect individual rather than joint impacts in Tables V-1 and V-2 of the EIR.

Under Alternative 5, Slate Creek has a minimum flow requirement met by curtailing flow as needed into Sister Creek Tunnel. Consequently, carryover storage for New Bullards Bar Reservoir increases by 9 TAF for the 71-year period annual average and 30 TAF for the critical period average. Drum Canal flow to the Bear River system is also curtailed thus increasing flow in the south fork of the Yuba River system. If instream flow at the furthest downstream point did not meet the above requirements after having met the upstream flow requirement, then diversions to YCWA were reduced. Under base case conditions, the 71-year annual average carryover storage was determined to be 648 TAF and the critical period carryover storage was 588 TAF.

Comment: [page 04] For Alternatives 3 and 4, carryover storage increases in Eastman Lake and Pardee Reservoir. Carryover storage in Hensley Lake increases for the long-term period average. The expectation is that, if a water user is required to bypass inflow that would otherwise be diverted to storage, that storage would decrease instead of increase. The increase cannot be explained by demand reduction. Further, Eastman Lake has a lower water right priority than other "senior" reservoirs in which carryover storage decreases under Alternatives 3 and 4. Based on these results, the SWRCB should re-evaluate the use of DWRSIM, and if necessary, do additional studies that more accurately reflect the environmental consequences of its proposed alternatives. (SJRG, USDOI)

Reply: Carryover storage modeling results for Pardee Reservoir must be interpreted with modeling results for Camanche Reservoir because EBMUD operates these reservoirs together to provide water to its service area. The combined carryover storage of the two reservoirs is lower for Alternatives 3 and 4 compared to the base case as would be expected if diversions to storage are curtailed under these flow alternatives.

The increases in carryover storage in Hensley Lake for the 73-year period for Alternatives 3 and 4 are typographical errors. As shown in the corrected version of Figure V-10, Hensley Lake carryover storage decreases for the 73-year period under Alternatives 3 and 4.

The increase in carryover storage in Eastman Lake for Alternatives 3 and 4 is not correct. Upon review, we discovered that when direct diversions were curtailed for the Chowchilla Irrigation District under these alternatives, the curtailment was modeled in DWRSIM as a demand reduction and the water was assigned to Eastman Lake storage instead of being "bypassed" to downstream model nodes as instream flow. The delivery impacts for the Chowchilla Irrigation District are shown in Tables V-1 and V-2. The delivery impacts for the Chowchilla Irrigation District can be added to the Eastman Lake carryover storage impacts shown in Figure V-9 to obtain the approximate storage impact to Eastman Lake. This results in the following carryover storage impact for Eastman Lake:

Alt. 3: 73-year period Impact = -1 TAF ; Critical Period Impact = -10 TAF
Alt. 4: 73-year Period Impact = -1 TAF; Critical Period Impact = -6 TAF

The monthly river flow calculations for the San Joaquin River at Newman and at Vernalis, and the Delta Outflow calculation would have been slightly higher as a result of bypassing the Chowchilla Irrigation District diversion curtailment to downstream nodes in the model. The increase, however, is slight and would not change the conclusions in the DEIR regarding river flow or other impacts.

Based on the explanation above, we do not believe that the carryover storage results for these three reservoirs warrants a re-evaluation of the use of DWRSIM for modeling water supply impacts, nor do they warrant additional studies to characterize the impacts of the flow alternatives.

Comment: [page 04] The EIR does not adequately present nor analyze the base case, that is the no alternative project, of which all other alternatives are compared with or analyzed. (SJC)

Reply: The components of the no project alternative (base case) for the flow objectives are described in Chapter II on page II-16. In the base case, the USBR and the DWR are responsible for meeting the Delta objectives of D-1485 and D-1422. In Chapter V, water deliveries, carryover storage, Delta exports and capacity for water transfers are quantified for the base case. Thus, the comment that the DEIR neither presents nor analyzes the base case does not seem justified.

Comment: [page 04] The DEIR's consideration of reservoir refill impacts appears deficient. For example, after stored water is delivered to satisfy Bay/Delta outflow requirements during critically dry years, a 'hole' is left in the affected facility, which is filled during the following years' inflow. This increases the volume of water diverted to storage in both SWP and CVP reservoirs in those subsequent years. Accordingly, it also decreases the flow available to meet downstream demands such as Delta outflow and to satisfy deliveries based on prior rights, making it more likely that there will be a shortage in subsequent years. The DEIR does not appear to take these and related adverse environmental impacts into account in its methodology. (BSWA)

Reply: DWRSIM models reservoir operations on a monthly time step using 73 years of historical hydrology (1922-1994). These model results are described throughout the DEIR. Therefore, the DEIR does consider the additional storage space created in a reservoir when downstream releases are increased.

Comment: [page 04] The DEIR does not adequately inform Carmichael Water District of the potential impacts to its water supply, customers, environment or groundwater resources if Alternative 5 is implemented. (CWD)

Reply: Under Alternative 5, responsibility to achieve the Delta objectives is assigned to (1) water users with storage in the foothill reservoirs that control downstream flows and (2) water users with upstream reservoirs that have a cumulative capacity of at least 100 TAF and who use water primarily for consumptive uses. If there is insufficient water in the reservoirs both to achieve the flow requirements and to meet all other downstream flow obligations, users of water downstream of reservoirs would receive reduced deliveries.

Chapter V, Figures V-1 through V-3 show that under Alternative 5, carryover storage in SWP and CVP reservoirs increases compared to the base case. Thus, CWD is unlikely to experience any water supply impacts under this alternative.

Comment: The DEIR is inadequate because it does not clearly address significant potential impacts associated with affected reservoir refill. (Shasta CWA)

Reply: Reservoir refill impacts, expressed in terms of carryover storage, are analyzed in Chapter 5, section B.

Comment: [page 04] The optimization studies used to establish operating rules for SWP and CVP reservoirs as run using DWRSIM should include cold water pool management assumptions. We are interested in the detailed assumptions regarding minimum pools and release criteria used in the

optimization studies at New Melones Reservoir. Assumptions at non-SWP/CVP reservoirs are also of interest. (DFG)

Reply: The criteria used for Shasta and Oroville reservoir releases are listed in Chapter 4, . On the Sacramento River, Shasta storage is maintained to meet downstream temperature objectives specified in the winter run chinook biological opinion. In response to other similar comments, temperature modeling has been done for the Sacramento, Feather, American and Stanislaus rivers. This modeling is discussed in Chapters IV and VI of the FEIR.

Comment: [page 04] The final EIR should disclose why the Yuba River and New Bullards Bar Reservoir with almost 1 million acre feet storage capacity are not a prominent part of this discussion, whereas two small impoundments in the San Joaquin Basin, Eastman Lake (85,200 acre-feet) on the Fresno River and Hensley Lake (150,600 acre-feet) on the Chowchilla River, are prominent? Water deliveries from the Yuba River change only with Flow Alternative 5 (Table V-1 and V-2), hence, carryover impacts might be expected only with that alternative, making a figure unnecessary. Deliveries from Eastman and Hensley lakes also change only in Alternative 5, yet carryover impacts are shown under all Flow Alternatives. The final EIR should explain whether New Bullards Bar Reservoir carryover storage is unaffected under the other Alternatives or changes like carryover in all other reservoirs included in the analysis. (DFG)

Reply: The discussion regarding impacts to New Bullards Bar Reservoir has been expanded. To understand water supply impacts, delivery impacts and carryover storage impacts should be considered together. The Yuba County Water Agency has responsibility to meet Delta flow objectives under Alternatives 3, 4, and 5. Curtailments of diversion to storage in New Bullards Bar Reservoir under Alternatives 3 and 4 are slight and are shown in Volume 3, pages A3-118 and A3-134 and Chapter V of the Final EIR. The Yuba County Water Agency also has direct diversions that are curtailed under Alternatives 3 and 4. YCWA's water rights fall into priority group 4. The frequency of curtailment of this water right priority group is shown in Figure V-25.

Comment: [page 04] The carryover tables incorrectly note the ability of Millerton Lake to carry over significant amounts of water. Millerton Reservoir has a "dead pool" storage level of 135,000 acre feet. The delivery outlets to the Friant-Kern Canal and the Madera Canal are above the floor of the reservoir in order to allow gravity deliveries into the canals. Thus, carryover storage levels must subtract 135,000 acre-feet from any anticipated carryover amounts. While releases into the San Joaquin River below Friant Dam can still occur below the 135,000 acre foot reservoir level, the reservoir volume below 135,000 acre feet would have to be replaced with diversions to storage before deliveries could resume to the Friant service area. The DEIR fails to consider this fact in its analysis. (FWUA)

Reply: The correction to the Alternative 5 modeling renders this comment moot. Tables V-3 and V-4 in Volume 4 of the DEIR show that the carryover storage in Millerton Lake never falls below the dead pool storage volume of 135,000 acre-feet.

Comment: [page 04] For the purposes of water supply planning and impact analysis, storage at the end of a critical period is much more important than critical period averages. Averages mask the significant impacts that may occur in any year or at the end of a drought period. Table V-4 should include additional columns indicating storage following a critical period, such as 1928-34 or 1987-92. (SJRG)

Reply: Averages can mask extreme data points in a data set. However, throughout the DEIR, long-term and critical period averages are used to characterize the modeling results because this approach provides a succinct, informative description. The detailed modeling output is referenced in the DEIR and available on the internet (or in hard copy upon request) for parties that require additional information.

Comment: [page 04] It is unclear what "optimization studies" are being referenced. Do you mean "operation studies"? (USDOI)

Reply: The term refers to studies performed to develop the optimal reservoir rule curve.

Comment: [page 04R] Alternative 5 continues to indicate that it provides several distinct advantages relative to the other alternatives. Adverse impacts on carryover storage at several key Central Valley reservoirs are minimized or in some instances carryover storage is improved relative to the base condition. Carryover storage is improved at Shasta, Oroville, Folsom, and New Melones reservoirs, however, these improvements are offset by reductions in carry over storage at other reservoirs east and south of the Delta, such as Camanche and Millerton lakes. (DFG-2)

Reply: Comment noted.

Comment: [page 04R] Carryover Storage in Central Valley Reservoirs: The revised chapter contains model run output that suggests that carryover storage in Shasta, Oroville, and Folsom under Alternative 5 are improved compared to carryover storage predicted in the original Chapter V in the November 1, 1997 DEIR. Those improvements although small, could provide an incremental benefit to aquatic resources. For example, increased carryover storage in Shasta Lake could improve conditions for winter-run chinook salmon that are dependent on maintenance of adequate, cool water in the upper Sacramento River to support spawning and rearing. Improved carryover storage in Oroville and Folsom could be beneficial to both fall run salmon and steelhead in the Feather and lower American rivers, respectively. (DFG-2)

Reply: Comment noted.

Comment: [page 05] Table V-3, entitled "Carryover Storage in Central Valley Reservoirs (TAF), 73-Year Period Annual Average," cites various carryover storages for Lake McClure for the eight alternatives, ranging from 522 TAF to 657 TAF. Likewise, in Table V-4 on the same page, entitled, "Carryover Storage in Central Valley Reservoirs (TAF), Critical Period Annual Average", various carryover storages for the eight alternatives range from 574 TAF to 644 TAF. This should be re-examined in light of the fact that since the construction of New Exchequer Dam, spanning 31 years of record, the average carryover storage (End-of-Month September) is 443 TAF. Maximum carryover storage was 686.8 TAF in 1975, and minimum carryover storage was 88.8 TAF in 1978. (Merced ID)

Reply: DWRSIM makes operating decisions based on a set of programming assumptions. In actuality, reservoir operators make decisions regarding water deliveries that may not be consistent with these assumptions. Accordingly, the modeled data is used to assess the relative changes among various operating conditions rather than to compare modeled results to historic conditions.

Comment: [page 07] The results of the modeling of Alternative 7 in the DEIR were puzzling. With other San Joaquin tributaries contributing to the Vernalis flows, one would expect that this alternative would have required smaller releases from New Melones, but the results presented appear to show much less water available to the New Melones contractors. Please explain this discrepancy. (Stockton)

Reply: Alternatives 1 through 6 were modeled using some of the New Melones operation criteria specified by the USBR in an April 26, 1996 letter (see DEIR, page IV-4) . Alternative 7 used criteria developed by the "Letter of Intent" parties in a document titled "Hydrological and Biological Explanation of the Letter of Intent Among Export Interests and the San Joaquin River Interests (May 7, 1996)". That document specifies a maximum delivery to Stockton East Water District and Central San Joaquin Water Conservation District of 49 TAF, to be made in wet and above normal years only. The difference in the amount of water delivered to New Melones contractors is a result of these different operations criteria imposed on New Melones Reservoir.

Section C. DELTA EXPORTS

Comment: [page 07] It appears that the top of inactive storage in Lake McClure is defined in the model as 115 TAF. This is incorrect in that the actual top of inactive storage is at 3 TAF. The storage between 3 TAF and 115 TAF can be used for instream flows but not for MID project diversions. This does not have a significant impact on the SWRCB studies due to the assumed groundwater pumping. The only time the storage of 115 TAF is reached is in 1977. (Merced ID)

Reply: The comment is noted.

Section D. CAPACITY FOR WATER TRANSFERS

Comment: [page 09] The DEIR assesses "the capacity for water transfers" in section D of Chapter V, but only in the context of cross-Delta transfers - no consideration appears to have been given to the many other options also available (e.g., export area to southern coast, interior south to southern coast, north valley ag-to-ag, etc.). These omissions should be rectified. (EDF)

Reply: The DEIR recognizes the importance of water transfers as a solution to reduced surface water supplies. Water transfers as a mitigation measure are discussed in Chapter XII, section B.3. However, predicting the specific water transfers that will occur as a result of implementing the flow alternatives is too speculative to analyze quantitatively.

Comment: [page 09] Flow Alternatives 3 and 4 would decrease the ability of Carmichael Water District and other agencies to arrange for water transfers, as the total water resources available to transfer would be curtailed. Those agencies that have stored water would be less likely to release it to transfers because of the uncertainty in their own ability to store water in the future. In addition, refill requirements imposed by the USBR as a condition of transfer from any upstream American River water right holder makes the reliable availability of water from such transfers doubtful. (CWD)

Reply: The most likely source of replacement water for the CWD is Folsom Reservoir. Modeling results indicate that the SWP and the CVP have sufficient water supplies available to replace diversion curtailed in the Sacramento Basin under Alternatives 3 and 4. When a Sacramento Basin water right holder's diversion is curtailed, the model assigns water from the yield of the CVP or SWP

to that diverter. The modeling results show that the yield of the projects is sufficient, even during the critical period, to replace the water lost to water right holders in the Sacramento Basin whose diversions are curtailed. Further, the carryover storage in Folsom Reservoir (Figure V-3) improves compared to Alternative 2 where the CVP and the SWP are solely responsible for meeting the flow objectives.

Comment: [page 09] The estimate of transfer capacity is significantly overestimated because of the assumption that Banks and Tracy pumping plants will operate at full capacity from July through October. Banks and Tracy are unlikely to operate at full capacity because of operational limitations on the projects' abilities to pump water for export, such as, storage or conveyance capacity. The analysis also does not consider the availability of water for transfer which will decrease as deficiencies increase. (DWR, FWUA, USDOI, WWD)

Reply: As noted in the comment, the transfer capacity values represents maximum values because other limiting factors, such as lack of conveyance and/or storage south of the Delta, could not be quantified and incorporated into the analysis.

The transfer capacity analysis was used to compare the relative abilities of the export facilities to accommodate water transfers under the different flow alternatives. The transfer capacity values are not predictions of the amount of water that will be transferred under the different alternatives. We realize that the actual volume of water transferred will be less that the capacity calculated in this analysis.

The rest of this comment deals with limitations on water availability for transfer. We agree that there will be many factors influencing the amount of water available for transfer. However, as stated above, the transfer capacity calculation was not intended to be a prediction of the actual volumes of water transferred under the different alternatives.

The purpose of the water transfer analysis is to identify the maximum amounts of water that could be transferred under the flow alternatives under optimal conditions. The optimal conditions include adequate conveyance and/or storage south of the Delta and adequate sources of upstream water available for transfer. The actual transfer capacity may be less in many years. Nonetheless, the analysis provides valuable information about the relative impacts of the alternatives on transfer capacity. It also provides a basis for determining the maximum environmental impacts that could occur. Pursuant to this comment, the EIR has been revised to clarify the purpose of the water transfer analysis.

Comment: [page 09] "For this evaluation, July through October is assumed to be the most likely period for water transfers to occur." Since the economy of the Sacramento Valley Basin is based in agriculture and rice is the predominant crop, water transfers during July and August could reduce water supplies needed to insure proper maturation of high quality production. Since the rice industry endures more and more burn regulations, additional water is needed to insure adequate straw decomposition for earlier varieties. A case study done in 1992 indicates that rice production is curtailed in water short years. Some areas are able to switch to alternate crops, but many rice producing regions are suitable only to rice due to soil type. These reductions equate to economic losses to local city and county governments. (Gore)

Reply: The commentor is confusing water transfers and water curtailments. Transfers are voluntary arrangements between buyer and seller involving the exchange of water which is temporarily surplus to local needs. Transfers are one method for mitigating the impact of water curtailment.

Comment: [page 09] Water transfers are described as most likely to occur in July through October. The DEIR should disclose that July is a peak month of delta smelt entrainment based on past records of salvage. (DFG)

Reply: Comment noted. Delta smelt entrainment is discussed in Chapter VI.

Comment: [page 09] Without the SWRCB's recognition that the Area I landowners' water rights, and the water rights of others, must remain well-defined, enforced and secure, the DEIR's reliance on water transfers as a means of mitigation is improper. The DEIR analyzes alternatives that necessarily result in the illegal involuntary reallocation of water from Area I landowners, and does not analyze alternatives that fully honor Area I landowners' water rights. (Butte Co.)

Reply: We are unaware of any water rights, permits, or licenses held by the Area 1 Landowners. The Area 1 Landowners are CVP contractors who receive water diverted under permits held by the USBR. Impacts on CVP water deliveries are analyzed in the DEIR.

Section E. DIVERSION CURTAILMENTS UNDER ALTERNATIVES 3 AND 4

Comment: [page 09] Why does the frequency of curtailment for all groups increase under Alternative 4 as compared to Alternative 3? (SJRG, SVWU)

Reply: This condition is a result of the manner in which the supplemental water requirement is calculated when Friant is considered an export project. (Supplemental water is defined as water imported to the basin by the projects and water released from project storage which is in excess of export diversions, project carriage water, and project inbasin deliveries.) The adjusted Friant-Kern Canal exports, as defined on page IV-21 of the DEIR, are frequently reduced to zero at times when water is being released from storage at Friant. This has the effect of increasing the overall supplemental water requirement. Hence, more water right holders must be curtailed to provide the necessary water.

Comment: [page 09] To the extent that the SWRCB intends to apply Flow Alternatives 3 and 4 to the pre-1914 water rights listed in the Notice of Public Hearing, the SWRCB should revise that list of pre-1914 rights. The notice currently lists the YCFC&WCD's pre-1914 water rights along with 59 other pre-1914 rights with widely varying priorities. Unless the list is revised to include all pre-1914 water rights, or groups of pre-1914 rights with comparable priorities, water right holders like the District may be forced to curtail their diversions under Flow Alternative 3 or 4, while unlisted pre-1914 right holders with lower priorities could continue their diversions. (YCFC&WCD-2)

Reply: This is a comment on the hearing notice, not the EIR. Page II-16 of the DEIR discusses the treatment of pre-1914 appropriators under Flow Alternatives 3 and 4.

Comment: [page 11] The EIR states that the effect of curtailments on existing Term 91 water right holders will not be substantial because they have already arranged for fill-in supplies. No factual basis for this statement is provided. We are aware of several such water right holders who have no such fill-in supplies. Has the SWRCB conducted or relied on a statistically valid survey of Term 91 water right holders? If so, it should be cited and included in the DEIR. (BSWA)

Reply: Existing water right holders with Term 91 are required to either forego diverting, pump groundwater, or contract for a fill-in supply in the summer of all but the wettest years. Implementation of the Bay/Delta Plan will shift the date on which Term 91 is invoked earlier by a short period. The arrangements these parties have made should be valid for this additional short period and no substantial effect on these parties is expected.

Comment: [page 11R] The DEIR states that the Term 91 is currently included in appropriative water rights issued by the SWRCB after 1965 for diversions of more than one cfs or 100 acre-feet annually in the Central Valley. The DEIR, however, is vague about whether the Term 91 is applied to water rights permits issued after 1965, but with an earlier priority date based upon a petition for partial assignment of a state filed application, or based upon an area of origin statute. Also, the DEIR should state whether Term 91 applies to in-basin diversions that are upstream of the CVP and SWP reservoirs and/or diversion facilities. (EDCWA-2)

Reply: When a permit is issued on a state filed application, the priority with respect to Term 91 is an issue determined in the hearing held for assignment, based upon evidence presented in that hearing. It is not within the scope of the EIR to take a general position on this issue. Term 91 does apply to in-basin diversions upstream of CVP and SWP reservoirs if hydrologic continuity with the Delta exists and the other criteria are met. Table II-5 of the EIR contains a number of water rights which are upstream of CVP and SWP facilities.

Comment: [page 12] How are Figures V-22 through V-30 to be used in determining the frequency at which there is either insufficient post-1914 water to meet the objectives or if there will be a need to allocate flow responsibility to pre-1914 water right holders? (SJRG)

Reply: Flow Alternatives 3 and 4 do not propose to allocate responsibility to meet the flow objectives to pre-1914 appropriative water right holders. The referenced figures are used in the DEIR for analyzing the frequency of diversion curtailments for water holders that would have occurred at the current level of development over the historic hydrology with the implementation of Alternatives 3 and 4. The graphs would not be used in the real-time implementation of either Alternatives 3 or 4.

Comment: [page 12] The results in Figures V-12 through V-21 are influenced by the assumed baseline operations for New Melones. To the extent that New Melones baseline operation does not depict current and future operations, supplemental water required to meet the Vernalis objectives is also in error. (SJRG)

Reply: The modeled operation of New Melones reflects operation of the reservoir at the time the studies were conducted. Reservoir operations are not static and it is not unusual that the operation of New Melones Reservoir has changed and will change in the future. Remodeling the alternatives with every reservoir operations change is not practical. For example, the USBR is presently negotiating new operating conditions for New Melones Reservoir. By the time a new set of model studies was completed using existing operating rules, the USBR would likely be operating to a new set of rules.

Further, once a water right decision is adopted, the USBR may change New Melones Reservoir operation to accommodate the requirements in the decision. These observations apply not only to New Melones Reservoir but also to all reservoirs affected by the water right decision. Nevertheless, the modeling studies still provide a basis for comparing the alternatives.

Comment: [page 14] "With few exceptions, Alternative 4 requires greater frequency of curtailment for all groups than Alternative 3." Alternate 4 assumes that the Friant Project is considered to be an export project, shifting part of the water delivered by the Friant Project to the export areas, from being treated as a comparatively senior water right to a junior water right compared to inbasin users (and meeting that Friant obligation from New Melones Reservoir, p V-18). Is there an explanation of why in Figures V-22 through V-29, appropriators are curtailed more frequently under Alternative 4 than under Alternative 3. It would appear that under Alternative 4, with the Friant contribution to the Delta flows being in the Group 1 category, the result should be a lessening of curtailments of the other appropriators in the Central Valley Basin, rather than more curtailments! (CFWID)

Reply: This result arises from the Alternative 4 Supplemental Water equation (page IV-21). There are many months in which Friant's adjusted exports are zero and storage releases are being made for inbasin purposes. This has the effect of increasing the total amount of supplemental water to be allocated among parties, thus increasing the number of water rights subject to curtailment (see Volume 2, Appendix 3, pages 5 and 13).

Comment: [page 14] The DEIR's analyses of the impacts of Flow Alternatives 3, 4 and 5 do not consider the effects of storage and diversion by intervening users on Bay/Delta flows that would be created by curtailment of upstream water rights. An analysis of these effects demonstrates that curtailment of the SFID's water rights ultimately would not create any increased flows to the Bay/Delta Estuary.

The SFID's appropriative water rights authorize diversion to storage in the West Valley Reservoir from November 1 of each year through April 15 of the following water year. According to the historical analysis set forth in the DEIR at page V-14 and in Figures V-22 and V-24, the SFID's storage under its water rights potentially would be curtailed under Flow Alternatives 3 and 4 in February, March or April of some years. Also, pages V-18 and V-19 of the DEIR indicates that the SFID's storage under its water rights could be curtailed under Flow Alternative 5 at any time during its authorized storage season. However, water bypassed by the SFID in the Pit River under Flow Alternatives 3, 4 or 5 must pass through Big Valley before entering Sacramento River and reaching the Bay Delta Estuary. Water users in Big Valley divert substantial quantities of water from the Pit River under individual riparian rights, which would not be affected by the curtailments under Flow Alternatives 3, 4 and 5. Historically, no water flows in the Pit River past Big Valley during dry months, as a result of diversions by Big Valley's riparian water users. Because Flow Alternatives 3, 4 and 5 only would require curtailments of the SFID's water rights during particularly dry months in the District's storage season, any water bypassed by SFID during those months would be diverted for riparian use by Big Valley water users.

The SWRCB should recirculate an amended DEIR that specifically analyzes this issue, and based upon that analysis, the DEIR should conclude that water rights like SFID's should not be curtailed under Flow Alternatives 3, 4 and 5 because such curtailments would not provide any additional flows. (SFID)

Reply: There are nine water rights on DEIR Table II-5 which are in the Pit River watershed, two of which belong to the SFID. All are storage rights with no direct diversion. The latest date permitted for storage is May 15. Generally, Alternatives 3 and 4 curtail water rights between June and August, and do not require releases of previously stored water for Delta purposes. Therefore, Alternatives 3 and 4 will have minimal impacts in the Pit River basin.

The reservoirs identified in Table II-8 are responsible for meeting downstream flow requirements and obligations under Alternative 5. South Fork's reservoir does not appear on Table II-8, therefore the water rights of SFID will not be affected by Alternative 5.

Comment: [page 14] The DEIR states "The figures also show that for Alternative 3, all of the post-1914 diversions (groups 1 through 8) would be curtailed for the month of June in about 25% of the years, for July in 50% of the years and for August in less than 5% of the years. For Alternative 4, all of the post-1914 diversions would be curtailed for the month of June in about 35% of the years, for July in about 70% of the years, and for August in about 25% of the years. For groups 1 through 5, representing the majority of post-1914 rights, water is unavailable for appropriation in June in over half of the years and in July in 80% of the years."

The text appears to understate the information shown in the bar graphs on Figures V-22 through V-29. The curtailments in June are significantly higher than 25%, actually exceeding 50% for Groups 1 through 3. The curtailments for July are much higher than 50%. And the diversions in August are much higher than 5%! (CFWID)

Reply: Your statements about groups 1 through 3 are correct. The text of the DEIR is also correct because it discusses the frequency with which the entire group of post-1914 diversions are curtailed. Subsets of that group (for example groups 1 through 3) would be curtailed on a more frequent basis.

Comment: [page 14] The DEIR should analyze whether Alternative 5 may have different outcomes depending on how the tributary distribution of responsibility is allocated. (USDOI)

Reply: The formula for determining the distribution of responsibility for meeting the flow objectives to the tributaries is described on page II-29. The DEIR analyzes a reasonable range of alternatives. There are innumerable possible permutations to these alternatives and they cannot all be analyzed.

Section F. SUMMARY AND CONCLUSIONS

Comment: [page 17] Figure V-30 as it relates to pre-1914 water rights is based on insufficient data. Therefore, the methodology used for the table itself - the only information regarding the proposed curtailment of the pre-1914 water diversions - may be invalid. (BSWA)

Reply: The consumptive use of five large pre-1914 diverters were included in the modeling for Alternatives 3 and 4. Those water districts include Anderson-Cottonwood Irrigation District, Glenn-Colusa Irrigation District, Joint Water Districts, Sartain Mutual Water Company, and Western Canal Water District. These water districts represent a large percentage of pre-1914 diversions in the basin; therefore, the modeling should provide a reasonable estimation of pre-1914 diversions. The analysis showed that in over 95% of years there is sufficient natural flow to satisfy the demands of riparians, pre-1914 appropriators, and the water quality objectives. Under Alternative 3, as it is presently

configured, the curtailments imposed of project contractors with pre-1914 water rights become an inbasin obligation of the SWP/CVP, to be met by releases from storage.

Pre-1914 water rights are not included in Table II-5; therefore, these diversions are not before the SWRCB in this proceeding. Pre-1914 water right holders could be considered in a future proceeding.

Comment: [page 18] The FEIR should explain whether or not the statement, "The more restrictive export requirements from the base case also limit export opportunities." also applies to the other flow alternatives. (DFG)

Reply: The comment was made in reference to Flow Alternative 2. The Export/Inflow restriction is a fundamental component of the 1995 Bay/Delta Plan and applies equally to all alternatives.

Comment: [page 18] It would be informative to have an explanation of how Don Pedro and McClure reservoirs are "reoperated" so that they have no delivery reductions. Perhaps other reservoirs can use this strategy. (USDOI)

Reply: The statement that this comment refers to is based on the modeling results. These results show that deliveries to the districts served by these reservoirs do not decrease under Flow Alternative 3, however, reservoir carryover storage does. The DEIR uses the term "reoperated" simply to mean that full deliveries can be met from storage releases when direct diversions are curtailed. This would involve a different reservoir operation than under the base case.

These results are influenced by the assumption made in modeling the implementation of the flow alternatives that storage would be released from reservoirs to meet the 1995 Plan objectives. Actual reservoir operators may choose to reduce deliveries rather than draw down reservoir storage depending on the rule curves developed for the individual reservoirs.

Comment: [page 18] Alternative 2 is not feasible and should not be included in the DEIR because New Melones Reservoir has insufficient storage to meet San Joaquin River objectives. (SDWA)

Reply: The statement that Flow Alternative 2 cannot physically occur or is infeasible because New Melones storage is insufficient to meet San Joaquin River flow requirements is incorrect in the majority of hydrologic conditions. Historically, the USBR has been responsible for meeting the San Joaquin River objectives. When reservoir storage was insufficient to meet this responsibility, the objectives were not met. This is the situation that was modeled and the situation is a reasonable alternative.

If, in the future, releases from New Melones Reservoir are insufficient to meet the USBR's obligation on the San Joaquin River, then the USBR could find alternative water sources to meet the requirements. Because the SWRCB could not identify the sources of alternative water without significant speculation, this was not modeled. The USBR would be responsible for any additional environmental documentation required as a result of obtaining alternative water supplies.

Comment: [page 18] Please provide the facts and data to support the SWRCB's conclusion that water right holders with storage rights in New Don Pedro and Lake McClure do not have any delivery reductions under Flow Alternative 3 because, through reservoir re-operations, they have adequate

storage to meet delivery needs and Bay/Delta flow obligations? (Kings Co. Farm Bureau v. City of Hanford (1990) 221 Cal.App.3d 692.) With over 15 million acre-feet of storage in Lakes Trinity, Shasta, Oroville, Folsom, Millerton and New Melones and San Luis Reservoir, one might just as easily conclude that the CVP and SWP could be re-operated so as to result in no delivery impacts to their contractors. The EIR must consider the impacts of extended droughts on water users in addition to normal water year impacts. (SJRG)

Reply: The data to support this conclusion are presented in Tables V-1 and V-2, and in Figures V-7 and V-8. The data consist of model results from the DWRSIM studies of the flow alternatives. Model results for Alternative 3 (Tables V-1 and V-2) show that deliveries are not reduced for the Modesto, Turlock and Merced Irrigation Districts, the entities served from New Don Pedro Reservoir and Lake McClure. Figures V-6 and V-7 show that carryover storage in the two reservoirs decreases under Flow Alternative 3. Thus, the DEIR concludes that, by releasing water from storage to meet the 1995 Bay/Delta Plan objectives, delivery demands on these reservoirs can be met under Flow Alternative 3. This result is shown for both long-term average conditions and for critically dry conditions.

These results are influenced by the assumption made in modeling the implementation of the flow alternatives that storage would be released from reservoirs to meet the Plan objectives. Actual reservoir operators may choose to reduce deliveries rather than draw down reservoir storage depending on the rule curves developed for the individual reservoirs.

Comment: [page 18] We suggest adding a table listing the unimpaired flows used to determine the obligations (also Page II-29). (USDOI)

Reply: A table listing the unimpaired flows used in calculating watershed obligations under Alternative 5 is included in Volume 2, Appendix 4.

Comment: [page 18] The SWRCB's analysis of Alternative 5 does not evaluate the potential water supply and economic impacts to San Francisco and its customers. As presented in the DEIR, San Francisco would be required to provide a certain inflow into New Don Pedro depending on the month and the water year type. In those instances when modeled flows equal or exceed the required inflow, the DEIR's analysis required no additional water from San Francisco. The SWRCB would then require the districts to provide the entire Tuolumne River share.

This alternative is not only inconsistent with the New Don Pedro FERC license, it ignores the prior rights of the districts. In order to comply with Alternative 5, San Francisco would have to provide the required Bay Delta water in addition to water that it must provide the districts pursuant to the Raker Act and the Fourth Agreement. The Raker Act water that the districts receive from San Francisco must be ahead of any water that San Francisco would be required to provide for Bay Delta purposes. (TID&MID)

Reply: The modeling done for the DEIR for Alternative 5 shows that water is required from the Hetch Hetch project infrequently, and only in small quantities. See the general comment on FERC issues, Chapter 2, section E.

Comment: [page 19] Flow Alternative 7 appears to allow reductions in the specified 1995 Bay/Delta Vernalis flow objectives. What are the allowed changes in simulated Vernalis flows

during these months? Are the flows required during the other months for Vernalis salinity objectives identical to those simulated for the other flow alternatives? Why isn't there any simulated reduction in San Joaquin River basin deliveries for Flow Alternative 7? (Stockton)

Reply: The sentence referred to on page V-19 states that "(u)nder this alternative (7) the flows required at Vernalis are reduced based on the Letter of Intent." Under Alternative 7, the flow objectives for the San Joaquin River at Vernalis were replaced by minimum flows at Vernalis in the Letter of Intent. A complete description of Flow Alternative 7 is provided in Chapter II of the FEIR; detailed assumptions used in DWRSIM flow modeling for Alternative 7 are provided in Volume 2, Appendix 2 of the FEIR.

Regarding the issue of flows required to meet the Vernalis salinity objectives, the assumptions for calculating the flows are the same for all alternatives. However, because flows upstream of Maze Road are different among alternatives, the flows at Vernalis change as well. In addition, Flow Alternative 7 limits releases from New Melones Reservoir for salinity control at Vernalis to 70,000 acre-feet.

The simulation of Alternative 7 does not reflect a reduction in San Joaquin River basin deliveries because the contribution to Vernalis flows from the San Joaquin River tributaries is generally achieved through reservoir reoperation rather than cutbacks in deliveries.

Comment: [page 19] It is not clear in the EIR how Flow Alternative 6 places a new demand on CVP storage in the Sacramento Basin. As the alternative proposes recirculation of the water to serve as dilution and pulse flow for the San Joaquin River-Southern Bay/Delta system, no net increase in water demand should be incurred other than instream uses. To the extent increased diversions occur from the San Joaquin River, selenium and salinity loadings could be affected. (CVRWQCB)

Reply: Flow Alternative 6 places a new demand on CVP storage in the Sacramento Basin because the Vernalis flow objectives are met by the CVP by using its Sacramento Basin storage and export facilities rather than using water released from New Melones Reservoir or some other San Joaquin River source. In addition, the use of the joint points of diversions under this alternative allows the CVP to make up some of the export reductions caused by implementation of the 1995 Bay/Delta Plan through export of stored water in the Sacramento Basin. No increase in diversions from the San Joaquin River are expected to occur under this alternative, therefore there should be no effect on selenium and salinity loading.

Comment: [page 19] Based on USBR's studies, Alternative 6 may have a limited ability to save water on the Stanislaus. The times when Alternative 6 could potentially save some water in New Melones would be when the fishery requirement calls for 300 cfs during Apr/May and when the flow requirement at Vernalis is not being met. In USBR studies that have considered the recirculation proposal, we have assumed that during April and May, New Melones will be operated to 1500 cfs to meet instream flow requirements a majority of the time. Because of that limitation, USBR would not be able to release additional water to attempt to meet the flow requirements at Vernalis. (USDOI)

Reply: Comment noted.

Comment: [page 19] The document's conclusion regarding the adverse effects on CVP and SWP from the recirculation idea appear to be incorrect. SDWA's testimony will set forth the specifics and modeling of this program. (SDWA)

Reply: Comment noted.

Comment: [page 19] The section on Flow Alternative 5 discusses the substantial effect on the Friant Project if it is obligated to make downstream releases. The document should address whether or not the effects on Friant are justified given its relationship to the causes of the problem. Does the modeling separate out the effects of Class II Friant water from Class I Friant water? (SDWA)

Reply: The first part of the comment does not address an environmental effect of implementing the 1995 Bay/Delta Plan. The analysis in the DEIR identifies the impacts of a 500 TAF reduction in deliveries to the Friant Service Area. This analysis assumes curtailment of Class II water prior to curtailment of Class I water.

CHAPTER VI. ENVIRONMENTAL EFFECTS OF IMPLEMENTING FLOW AND WATER OPERATION ALTERNATIVES

Comment: In Chapters VI and XII respectively, the DEIR states that "alternative surface water supplies could be secured through water transfers" and that "water transfers are the most promising way of closing the gap between water demands and dependable water supplies over the next ten years." However, as a solution to water shortages, water transfers are complex and uncertain because of the legal, physical and institutional obstacles that can impede transfers. These obstacles include limited conveyance capacity, lack of conveyance facilities to certain areas, third party impacts, economic impacts, impacts to legal users of surface water and groundwater, and lengthy regulatory approvals. (DWR, EBMUD, FWUA, Gore, VWPA)

Reply: Water transfers are a promising way to close the gap between water supply and demand over the short-term. There are substantial obstacles to successful water transfers; however, there is also substantial effort at this time to overcome these obstacles. The DEIR describes water transfers as one of several types of actions that may be taken in response to reductions in supply. The DEIR, however, does not suggest that water transfers are a panacea for water shortages.

The commentors may have gotten this impression from one of the methodologies for estimating the economic impacts to urban areas of securing alternative supplies. In this method, the assumption is made that all supply reductions will be made up through water transfers (DEIR page XI-8). This assumption is not meant to be interpreted as the only proposed solution for reductions in supply to urban areas. Page XI-8 of the DEIR states that "agencies, and retail water utilities that they serve, are likely to respond [to water shortages] by arranging transfers of water from agricultural users, increasing use of recycled water, reducing water use by more extensive conservation programs, and possibly imposing rationing on their customers."

In the current proceeding, the SWRCB is not proposing to implement water transfers, or any other specific measures to respond to water supply reductions, as a part of implementing the 1995 Bay/Delta Plan. However, when post 1914 appropriations of surface water and groundwater subject to the laws of surface water rights are transferred, the SWRCB must approve the transfer before it can be implemented. The environmental impacts resulting from a specific water transfer are in most cases addressed in an environmental document analyzing the proposed transfer. The environmental documentation of a proposed transfer is the appropriate forum for evaluating third party impacts, economic impacts, and impacts to legal users of surface water and groundwater due to that water transfer.

Comment: It should be noted that the use of annual monthly averages in the various hydrological tables of flow, export, etc., limits our ability to see potential significant changes caused by the flow and joint points of diversion (JPOD) alternatives. Anadromous fish life histories reflect specific environmental needs, such as temperature limits and critical migration periods. Monthly averages may appear to be acceptable to the fish requirements, but daily levels may reflect harsh conditions that could cause high mortalities not reflected in the DEIR. (USDOI)

Reply: Ideally, the model time steps would be shorter than monthly averages to analyze the effects of short-term variation in environmental variables on biological resources. However, only average monthly flow and export predictions were available from the DWRSIM analysis. Use of average

monthly values is adequate to compare the general differences among the alternatives. Limitations of using these time steps are discussed in Chapter IV.

Comment: The DEIR should analyze additional water quality impacts and develop significance criteria for the preferred alternative chosen by the SWRCB. The DEIR does not adequately discuss the effects of the flow alternatives on: (1) Delta water temperatures, turbidity, and primary productivity in the Delta and Suisun Marsh; (2) dissolved oxygen; or (3) pH as it affects aquatic life. The DEIR does not discuss the adequacy of current regulations for controlling nutrients from agricultural operations. The DEIR also did not adequately discuss the toxicity of ammonia to aquatic life. (DFG)

Reply: The purpose of the present proceeding is to implement the objectives in the 1995 Bay/Delta Plan. Chapter VI has been revised to include an analyses of temperature effects of the flow alternatives. The effects of the flow alternatives on DO are discussed in Chapter X. Chapter X assumes that all objectives in the 1995 Plan are met. The effect of each particular alternative is not analyzed because the differences in source water are not different enough to affect DO concentrations significantly. Similarly, the source of the flow is not expected to affect the pH of the Delta.

The adequacy of current regulations regarding agricultural discharges to surface waters is not a subject of this proceeding. Under State law, the RWQCBs have primary responsibility for agricultural discharges. Ammonia is toxic to aquatic life. The proposed plan will not necessarily affect the discharge of ammonia into the Delta or its tributaries; however, the Central Valley RQWCB has been previously directed to review the effluent limits for ammonia imposed on the City of Stockton's WWTP in consideration of the Plan objectives.

Comment: The DEIR acknowledges that water development for agricultural, municipal and industrial use, and resultant pollution have had profound impacts on fish and wildlife resources and habitat; yet the apparent complexity of the subject provides a ready excuse to avoid spending the necessary time, effort and funds to gain a clearer understanding of cause and effect. Thus, we are being asked to accept an incomplete analysis of effects of complex agreements, legal and policy decisions on important water quality parameters such as dissolved oxygen, temperature or pH and associated impacts on fish and wildlife resources with only some of the necessary tools to accomplish it. The DFG, therefore, recommends that SWRCB develop the necessary modeling to address the data needs described above and include this information in the FEIR. (DFG)

Reply: CEQA does not require a lead agency to perform all research demanded by commentors (Title 14, Cal Code of Regs, Sec. 15204(a)). In the EIR, we have based analysis of impacts on existing flow, salinity, dissolved oxygen, water temperature, and fishery models. We have selected the most appropriate models available at this time. Although the models may not accurately predict actual flow, water quality, and fish population sizes, they are valid for use in predicting the relative differences in these parameters between the project alternatives. As better analysis methods become available in the future, we will use them when Plan objectives are reviewed in the triennial review process.

Comment: Millions of dollars have been expended to assure cold water releases from Shasta Dam into the Sacramento River for salmon, steelhead, and other species of fish. During mid-June, July, and August, the water in Deer Creek reaches 80 degrees or higher. If this water is bypassed, it's not good for the river due to the high temperature levels. It's our impression that our use of water for

irrigation is actually of benefit to salmon and steelhead as this creates an environment less inducive for predator fish that thrive on them. (SVRC)

Reply: Deer Creek enters the Sacramento River considerably below the section in which temperature is controlled. Operation of the temperature control device at Shasta Dam is acknowledged in the EIR, Chapter III. SWRCB records indicate there are six water rights on Deer Creek in Tehama County, all direct diversions. It is highly unlikely that leaving water in the creek will have adverse impacts on fish. There is no evidence that water diversions reduce predator populations.

Comment: The discussions of the effects of the various project alternatives do not correlate well to the species mentioned in the Environmental Setting section of the DEIR. (USDOI)

Reply: The species selected for detailed analysis are representative of the species occurring in the Bay/Delta system.

Comment: The DEIR does not evaluate the important effects of channel hydraulics on a Delta-wide basis that are the consequence of export operations. The DEIR also fails to acknowledge the disproportionate impact of the SWP and CVP project pumps on fish populations and aquatic resources in the Delta. (SVWU)

Reply: The actual effects of changes in channel hydraulics on fish are not completely understood and there are no sound methods to quantify these effects. It has been noted by other parties that these flows are smaller than the tidal flux that occurs naturally in the Delta. The DEIR described the impacts from the projects in the entrainment discussion for the aquatic resources in Chapter VI. The EIR acknowledges that the Delta exports impact aquatic resources.

However, the projects are not the only source of impacts. See general comment in Chapter II for discussion of the relative impacts of upstream water use and Delta export operations. In addition, the project analyzed in the EIR is the implementation of alternatives to meet the water quality objectives in the 1995 Bay/Delta Plan, including changes in the operation of the Delta export facilities. The project analyzed is not the entire operation of the Delta export facilities.

Section A. BACKGROUND INFORMATION ON FLOW OBJECTIVES

Comment: [page 001] The relationship between flow, salinity, and the biological response of various fish and invertebrate populations is both complex and highly dynamic. This discussion overly simplifies the strength of the correlation between these environmental parameters and the corresponding abundance and/or condition of either fish or invertebrate populations within the Delta. Very little quantitative information has been developed on the relationship between flow, salinity, and "wildlife" populations within the Delta, other than indirect effects on vegetation and other habitat parameters. (SWC)

Reply: Comment noted. There are several X2/abundance relationships developed for aquatic species in the Bay/Delta that demonstrate the relationship between flow, salinity, and species abundance. The statement referred to has been revised in the FEIR to acknowledge that this relationship is not absolute and is not as simple as implied in the DEIR. The revised text states "Salinity standards were used instead of flow objectives because methods had not been developed to quantify Delta inflow and

outflow and because both flow and salinity are closely related to the health of aquatic resources in the Delta".

Comment: [page 001] A statement is made that "Delta outflow and its related salinity values" have been found to correlate with certain estuarine resources." This incorrectly implies outflow is the sole indicator affecting the health of the estuary. Corollary statements are needed to discuss the negative correlation of estuarine health and pumping by the CVP/SWP. (YCWA-1A)

Reply: The purpose of this discussion is to provide background information on the flow objectives in the 1995 Plan. It does not imply that outflow is "the sole indicator affecting the health of the estuary". There is discussion regarding the effects of export pumping elsewhere in the chapter.

Comment: [page 002] To describe operation of the Delta Cross Channel gates, the DEIR states "The gates are required to be closed in the winter and spring to reduce the diversion of eggs, smelts, and larvae into the central Delta where survival is generally reduced." Commentors recommended that "smelts" be changed to "smolts", since the DCC gate closures are made to increase survival of chinook salmon smolts, not smelt. (USDOI, DWR, SWC)

Reply: Revision made to text as recommended.

Comment: [page 002] The DEIR states that the modeled hydrology is compared to the flow and reservoir needs of fish. It is unclear why the evaluation of alternatives is based upon comparison to "the flow and reservoir needs of fish", rather than to the Base Condition. Identification of "needs" is problematic and can lead to misinterpretation. (PCWA-1)

Reply: A sentence was added to state that a comparison was made of the alternatives to base case conditions.

Section B.1. ENVIRONMENTAL EFFECTS IN THE DELTA, Hydrology

Comment: [page 002] A major concern is that once a flow alternative is chosen, operational adjustments will be made in the Delta by the SWP and CVP to keep the Delta "in balance" during controlled conditions. This will influence the "real world" flows that determine Delta hydraulic parameters important to anadromous fish that are not represented in the DEIR. (USDOI)

Reply: Reasonable assumptions are made to model water project operations under the flow alternatives. There are, however, numerous possible operational choices under each of the alternatives. The SWP and the CVP will try to maximize their deliveries and their flexibility once a flow alternative is selected, and their operational choices may not be the same as modeled. It is not possible to model or analyze all possible operational choices that could be made upon adoption of a water right decision.

Comment: [page 002R] The DEIR may overstate the benefit of Flow Alternatives 3, 4 and 5 because flows released to meet objectives may be diverted by intervening water users unless actions are taken to limit additional diversions. (DFG)

Reply: It is unlikely that the upstream curtailments would fail to result in the expected beneficial flows in the Delta. DWRSIM accounts for non-project diversions and depletions. The model operates upstream project reservoirs in such a way that fixed downstream demands (i.e. non-project diversions or water quality objectives) are satisfied first, with the remaining water available for export. If additional water is released due to curtailment and downstream demands are fully met, then water is passed through to the Delta. In actual practice, there is hydrologic continuity between most of the diversions subject to curtailment and the Delta. Therefore, downstream water users are being satisfied, and there is no reason to believe that diversions would increase because of an incremental increase in the river flow. If water released for Delta purposes was diverted, the SWRCB could do one or more of the following: (1) shift the added burden onto the projects under the theory they are the only water right holders large enough to act as guarantors of the objectives, (2) take enforcement action against illegal diverters, or (3) cut more deeply into the ranks of water right holders to produce more water.

Comment: [page 002R] Alternative 5 continues to provide the best conditions in the Delta with respect to inflow, outflow, and internal Delta flow patterns due to the balance between the Sacramento and San Joaquin contributions. This alternative has the greatest contribution from the reservoirs east of the Delta and on the San Joaquin River system. DFG suggests modifications to Alternative 5 to clarify upstream water sources and establish operations criteria that will minimize adverse effects on fish and wildlife upstream. For example, flow fluctuation criteria to reduce redd dewatering and juvenile fish stranding should be considered for each stream with sensitive species and sport fisheries. (DFG-2)

Reply: The SWRCB's proposed project is the assignment of responsibility to meet the water quality objectives in the 1995 Plan. The project does not include the establishment of specific instream flow requirements to protect fish and wildlife upstream. The proposed criteria could be appropriate mitigation if there were adverse impacts to upstream fish and wildlife that might result from implementation of any of the SWRCB's alternatives, including Alternative 5. However, the DEIR does not identify adverse impacts on fish or wildlife as a result of changed stream conditions and states that no mitigation is required.

Comment: [page 003] Why do Alternatives 2, 3, and 4 result in increased San Joaquin River flows during the summer months? Since the Plan does not require flows of any amount during July and August, why would the flows increase over historic uses depending on who is charged with meeting April through May and October flows? (SDWA)

Reply: The flow increase at Vernalis in summer months for Flow Alternative 2 is minor and is caused by modeling variability between Alternative 2 and Alternative 1. Flow Alternatives 3 and 4 have significantly higher flows at Vernalis than Alternative 1 during the summer months because San Joaquin River water users are required to curtail diversions by water right priority under the modified Term 91 approach under these alternatives.

Comment: [page 004] It is not clear why the 1995 Bay/Delta Plan objectives produce the patterns of change in inflow and outflow shown in tables VI-5 through VI-8. Delta inflow and outflow are substantially lower in October, higher in November, and lower in December and January. The FEIR should clarify if there is some relationship to exports that can explain these monthly inflow or outflow variations and why these patterns occur. (DFG-2)

Reply: The overall changes in the pattern of inflow and outflow in the fall and early winter are caused by the interaction of several effects, including higher Delta outflow objectives under the Plan, increased exports in October under Plan conditions, and lower carryover storage levels in reservoirs.

Comment: [page 005] Tables VI-9, VI-10. These tables ostensibly list the differences in levels of export pumping among the various Flow Alternatives. These tables are based solely on the limited premise that appropriative diverters would pay the CVP/SWP rather than curtail their diversions. Without an analysis of the appropriate range of curtailment premises, including one with full curtailments, this tabulation, as well as Tables VI-1 to VI-8, do not portray the potential changes in Delta hydrology that could occur under the various flow alternatives. (YCWA-1A)

Reply: This comment appears to apply only to Flow Alternatives 3 and 4. The majority of the water directly diverted in the Sacramento Basin and subject to curtailment under these alternatives is diverted by parties with existing contracts with the SWP and the CVP. These parties will continue their diversions as assumed in the DEIR. The DEIR also assumes that San Joaquin Basin direct diverters replace surface water diversions with groundwater pumping. Therefore, the issue becomes how would the upstream hydrology and export operations change based on the possible range of decisions that could be made by Sacramento Basin water users who are subject to the proceeding but without water supply contracts. The quantity of water that falls within this category is approximately 107 TAF. The assumption in the draft EIR is that these parties will seek contracts and this assumption seems most reasonable. Further speculation about alternative assumptions does not seem productive.

Comment: [page 005] The broad conclusive statement in the second paragraph regarding the overall positive environmental effects in the Delta from implementation of the 1995 Bay/Delta Plan seems premature and out of place at the end of the first of six sections which will describe those environmental effects. (DFG)

Reply: Comment noted. The text has been edited by deleting the last sentence of the second paragraph on page VI-5.

Section B.2. Salinity

Comment: [page 005R] Factors such as time and location of diversion; quantity, timing, temperature and location of return flow; and design and capacity of diversion facilities must be considered in evaluating the impact of a particular diversion on water quality objectives. (CDWA)

Reply: Where analytical tools such as models were available, quantitative analyses were conducted. Where adequate information was available, but analytical tools were unavailable, qualitative analyses were conducted.

Comment: [page 006] The discussion of X2 deserves background to provide the reader the rationale for this standard. The X2 standard sets the objective for duration and location of the 2 (PPT) total dissolved solids salinity level in the Delta. This salinity level is commonly associated with the location of the entrapment zone (the zone that approximates the location of the freshwater interface with saline water where the food chain is most suitable for sensitive biota and fishery species). X2 is used synonymously with 2 PPT and entrapment zone. The X2 standard is set such that the

entrapment zone is moved away from the influence of the CVP, SWP, and Contra Costa export pumping plants. The absence of these [CVP, SWP, & CCWD] pumps would allow the location of X2 to be in more easterly regions. The DEIR should address the water supply impacts of X2 for differing locations and the relative success that a more easterly X2 would have if exports and entrainment by the CVP/SWP were not present. The incremental water cost of moving X2 away from the CVP/SWP pumps should be the responsibility of the CVP/SWP. (YCWA-1A)

Reply: The X2 objective was set to provide sufficient Delta outflow to protect fish and wildlife beneficial uses in the Delta. Responsibility for meeting the objective will be assigned based on evidence submitted at the hearing. Alternatives 2, 6, 7, and 8 place responsibility for meeting Plan objectives, including X2, on the CVP and SWP.

Section B.2.a. X2

Comment: [page 006] Within the discussion of the effects of various alternatives on the location of X2 the observed differences in average location among the various alternatives are not likely to be biologically significant. The location of X2 varies substantially based on daily tidal dynamics and variation in freshwater outflow occurring within a month. Although the modeling results provide a convenient tool for comparing alternatives, the relatively small resulting difference in the location of X2 should be interpreted in context with the known variation occurring in X2 location within and between years within the system. Given the magnitude of naturally occurring variation, differences predicted by the models in the location of X2 (Table VI-11) are not likely to be biologically significant. (SWC)

Reply: Comment noted. There is little variation among alternatives; however, it is evident that the X2 location generally moves downstream in comparison to the base case which is anticipated to benefit biological resources. The statistical significance of the benefits compared to the base case is not known.

Comment: [page 006] The last sentence of the first complete paragraph should be revised for clarification as follows: "...the majority of the field salinity EC data are measured at the surface. These data are adjusted to 25ºC to provide comparable data." (DWR)

Reply: Revision made to text.

Comment: [page 006] Next to last paragraph, last line. Is the reference to "...when X2 moves upstream about 2.5 miles" correct? Should it be "2.5 km" instead? (DWR)

Reply: The units were incorrect. The text has been revised.

Comment: [page 007] The insignificant effect of San Joaquin River flows on the position of X2 is evident from Table VI-11. As stated on page VI-6, [t]he effects of Alternatives 2, 3, 4 and 7 are virtually indistinguishable from each other. Alternative 7 provides far less water on the San Joaquin River in February through June than Alternatives 2, 3, or 4 yet the effect on X2 is minimal. In some cases, X2 actually moves downstream with less San Joaquin River flows. In many months X2 under Alternative 7 is in the same location or within 0.1 km (328 feet) of the X2 position during the same months under Alternatives 2, 3, and 4. It is both unreasonable and a waste of water to require the San

Joaquin River basin users to provide so much additional water with little or no measurable benefit to the Bay/Delta. (SJRG)

Reply: Compliance with the Vernalis objective should improve conditions in the southern Delta, but it is not expected to affect significantly the location of X2. The reason X2 varies little among the alternatives is that all of the alternatives are formulated to meet the outflow objectives in the 1995 Bay/Delta Plan.

Comment: [page 007] This paragraph inadvertently refers to Figure V-12 (Page V-10) to illustrate outflow and export values for Alternative 6 for the December - January period. This figure depicts annual exports. Table VI-7 and Table VI-9 do provide outflow and export results. The text should also note that Delta inflow is reduced for Alternative 6 (Table VI-5). (DFG)

Reply: This paragraph was changed in the revised Chapter VI and the reference to Figure V-12 removed. Delta inflow is reduced for Alternative 6 from October through January (Table VI-5), but only in December does Alternative 6 have the lowest Delta inflow of all the alternatives.

Comment: [page 007] To help your readers, we recommend that you include a map and a table showing how an X2 position relates to the location of Collinsville, Chipps Island, and other key geographical points in the estuary. The text might mention here and in appropriate sections of previous chapters that the X2 relationship to the abundance indices of some species is not as strong as it was when X2 was originally evaluated. Kimmerer (1997) attributes this to the effects of Potamocorbula. The FEIR should consider the significance of this new information as it relates to the impact analyses on the various species. (DWR)

Reply: A map is included in the FEIR. Regarding the X2 relationship to abundance indices, other commentors have made similar observations. See reply to comment for Chapter IV, Section E.2, Page 12 for a response to this issue.

Comment: [page 008] DFG does not concur with the conclusion that X2 changes are positive for aquatic species. The model results show that in some years, the shift was eastward and potentially detrimental to fishery resources. The DFG believes these eastward shifts result in impacts that are significant and should be mitigated. (DFG)

Reply: The revision in the May, 1998 version of the DEIR concludes that the X2 changes are generally positive for aquatic resources because the movement of X2 is westward during the 73-year period except in October and January when there were eastward shifts of 1.1 km or less. During the critical period, the eastward shift occurred only during October, January, and August and had shifts of less than 3 km. The October and January periods are still farther west than in September. Historically, the position of X2 has varied between San Pablo Bay (River km 50) and Rio Vista (River km 100) (ISDP vol. I 9-23). In recent years, X2 has typically been located between Honker Bay and Sherman Island (River km 70 to 85). The FEIR is revised to clarify that the X2 shifts generally benefit aquatic resources. The X2 shifts that are eastward are not considered significant because they are less than 3 km and remain within the historic range.

Section B.2.b. Electrical Conductivity Within the Delta

Comment: [page 007R] The FEIR should show a frequency distribution of salinity impacts, or some other method, to allow determination of how often a certain salinity level is exceeded on a monthly basis for each alternative. (CCWD-2)

Reply: The selected 16-year period in Chapter VI and XIII is adequately representative of salinity conditions in the Delta, and therefore provides sufficient information to assess potential impacts on the environment. The frequency distribution of chloride concentration at Rock Slough for the three Southern Delta Salinity alternatives provides additional information. Therefore it is included in Chapter IX, Section C. 2. b. in a graph titled "Percent Probability of Exceedence of Water Quality Objectives at Contra Costa Canal at Pumping Plant # 1 (73-year model hydrology).

Comment: [page 007R] Flow Alternative 2 does not meet obligations on the San Joaquin River at Vernalis, where a flow requirement exists with no effective implementation mechanism. (EDF)

Reply: As formulated in the DEIR, and modeled by DWRSIM, Flow Alternative 2 meets the Vernalis flow objectives for protection of fish and wildlife. Fully meeting the fishery flows reduces reservoir storage to minimum pool on several occasions, resulting in Vernalis salinity violations.

Comment: [page 007R] The EIR should include a comprehensive analysis of the program's water quality impacts including simulations of water quality variations over the full historical period. (CCWD-2)

Reply: Chapter IX includes an analysis of the effects of barrier operations on salinity over the 73-year historical period for three alternatives, including Southern Delta Salinity Alternative 2, which assumes 1995 Bay/Delta Plan flows. This comprehensive analysis is expected to provide decision makers with enough information regarding the long-term impacts of each of the flow alternatives on Delta salinity because all of the alternatives (except for the San Joaquin River Agreement) assume the same Delta outflow, export, and salinity objectives will be met. However, because the SWRCB recognizes that the source of the water to the Delta affects salinity, analyses over a 16 year period are provided in Chapters VI and XIII.

Chapter XIII compared monthly average salinity at six Delta stations for nine Joint Point alternatives over a 16-year period from 1976 to 1991. The DWRDSM model runs and salinity graphs in Chapter VI for the eight Flow Alternatives have been revised to include the same period. Dry years in the period include 1981, 1985, 1987, and 1989. Critical years in this period include 1976, 1977, 1988, 1990, and 1991. Given the accuracy limitations of the model, and the fact that salinity increases are of greatest concern in dry and critical year types, the SWRCB believes that the revised model runs cover a sufficiently long period of time to 1) compare the *relative* effects of the alternatives on salinity; and 2) evaluate the worst case impacts to the environment.

Comment: [page 008R] Why are the October chlorides [at CCC] lower than the January chlorides, even though the outflow requirements are lower in October than January? Why are dry year chlorides higher than critical year chlorides? The actual relationships between Delta flows and salinity should be more clearly identified rather than described as "modeling mysteries" that defy explanation. (Stockton-2)

Reply: The comment assumes that salinity at Contra Costa Canal is directly related to the Delta outflow objective. This is an erroneous assumption. Salinity at Contra Costa Canal is affected by a

number of factors, including Delta outflow, project exports, antecedent salinity, CCWD diversions, local agricultural drainage, cross-channel gate operation, and barrier operation. Furthermore, although it is true that October Delta outflow objectives are lower than those for January, the difference in the requirement is small. The Delta Outflow objective for October is 4,000 cfs, except in critical years when it is 3,000 cfs. The Delta Outflow objective for January is 4,500 cfs (except in certain high flow conditions). The difference between October and January outflow objectives in dry years is only 500 cfs; however, Delta outflow objectives rarely control operations in January.

The DWRSIM formulas for determining chloride at Contra Costa Canal are contained in the "G-model" developed by the Contra Costa Water District. The G model uses delta outflow and antecedent Delta outflow to calculate delta salinity. While the G-model is used by DWRSIM to determine reservoir releases to meet the objectives, the salinity figures do not directly use this information. The salinity graphs in Chapter VI and XIII, including the graph for chloride at Contra Costa Canal, use data from DWRDSM. DWRDSM uses more complex methods and shorter time steps to determine Delta salinities, and includes additional factors like tide cycles, channel bathymetry, exports and discreet agricultural drainage data to calculate salinity at interior Delta stations, which DWRSIM does not.

Cross channel gate operation has a significant effect on salinity at Contra Costa Canal. In the month of October, the cross channel gates are open. This results in high quality Sacramento River water being pulled through the central Delta which freshens water at Contra Costa Canal. In the month of January, the cross channel gates are closed for all or part of the month depending on the year. This results in increased salinity at Contra Costa Canal. The gates are also closed for part of the month in the preceding Decembers, but open for the preceding Septembers. As a result, antecedent salinity is higher in January than it is in October. Antecedent salinity conditions also have a significant affect on salinity.

The next observation, that chlorides are higher in dry years than critically dry years, was true for December, January, February, July, August, and September in the model runs included in the DEIR. The salinity figures in the DEIR averaged monthly salinities for 1987 and 1989 to represent dry years and 1988, '90, '91, & '92 to represent critical years. The revised figures use monthly averages from 1976 - 1991 and present a slightly different picture. With the new data, the observation holds true only for January, July, August, and September. In dry years, export pumping is higher than in critical years relative to Delta outflow. This results in higher salinities at Contra Costa Canal.

Comment: [page 008R] It is suggested here that the differences in CCC chloride concentrations predicted by DWRSIM and DWRDSM indicate the need for "carriage water" to support exports during winter months (December and January). However, another possible explanation is that DWRDSM includes the effects of San Joaquin River salinity and Delta agricultural drainage water salinity, whereas DWRSIM only accounts for the effects of Delta outflow on CCC chloride. (Stockton-2)

Reply: The comment is correct; DWRDSM includes effects of river salinity and local agricultural drainage. DWRSIM only considers Delta outflow to calculate Delta salinity. However, in the winter months San Joaquin River salinity is likely to be reasonably good and local agricultural drainage is at a minimum. In these same months, exports are very high; therefore, carriage water is more likely to be the cause of the problem. Lastly, San Joaquin River water is not high in chlorides, but ocean water is.

Comment: [page 010] The time period selected for DWRDSM salinity modeling of the Flow alternatives and the Cumulative Impacts Alternative is 1988 - 1992, whereas the time period used for modeling Joint Point Alternatives is 1976 - 1991. This period ('88 - 92) excludes year types other than dry and critical years. It also makes comparison of Flow Alternatives effects to Joint Point Alternatives and Cumulative Impact effects difficult. Analysis of Joint Point alternatives did not include Below Normal year types for San Joaquin Valley stations. (CCWD-2, SDWA, SDWA-2)

Reply: Chapter VI (Flow Alternatives) and Chapter XII (Cumulative impacts) salinity model runs have been re-run to use the same time period (1976-'91) as Chapter XIII (Joint Point Alternatives) salinity model runs. The salinity figures now include Wet and Above Normal year types in addition to Dry and Critical year types. Below Normal year types are also included for Delta salinity stations subject to the "Sacramento 40-30-30" year classification index. There are no San Joaquin "60-20-20" Below Normal year types occurring between 1976 - 1991. The last Below Normal year in the San Joaquin Basin was 1971, and only six have occurred since 1930. The 16-year study provides sufficient information regarding impacts to the environment with respect to Delta salinity to forego additional model runs.

Comment: [page 010] Figures VI-2 through VI-17 show virtually no difference in monthly salinity with Alternative 7 compared to Alternatives 2, 3, and 4. It is both unreasonable and a waste of water to require the San Joaquin River basin users to provide so much additional water with little or no measurable benefit to the Bay Delta. (SJRG)

Reply: Comment noted. The higher flow requirements from upstream parties under Flow Alternatives 2, 3 and 4 are for the purpose of protecting fish and wildlife rather than salinity control.

Comment: [page 010] The SWRCB should address mitigation for the impacts of the barriers in the south Delta on salinity conditions at the CCWD intake. (CCWD-2)

Reply: The DEIR has not identified any significant impacts to water quality at the CCWD intake due to implementation of the 1995 Bay/Delta Plan; therefore, mitigation measures do not need to be developed. In addition, the SWRCB will not order the construction and operation of the barriers as part of its action to implement the 1995 Bay/Delta Plan. If the DWR and the USBR elect to construct such barriers, they are responsible for identifying and implementing mitigation measures. The programmatic level modeling analysis in the DEIR is meant to determine whether the DWR and the USBR could meet water quality objectives by construction of such barriers, but it is not meant to preclude other alternatives. For example, the 1995 Bay/Delta Plan states that a three party agreement among DWR, USBR, and SDWA could lead to amendment of the objectives.

Comment: [page 014R] How can the Vernalis standard ever be violated under Alternative 6 if that alternative recirculates enough water to meet that standard? (SDWA-2)

Reply: The salinity graph for Vernalis (DEIR Figure VI-14) does not show exceedance of the water quality standard under Flow Alternative 6 nor does the text indicate such. Water is recirculated under Flow Alternative 6 to provide pulse flows at Vernalis and to meet south Delta consumptive use needs. Water is not recirculated under this alternative for salinity control at Vernalis.

Comment: [page 16] Figure VI-14 shows average monthly EC at Vernalis for 1987-1992 for each flow alternative. If Alternatives 2, 3, 4, and 6 satisfy the same 1995 WQCP Vernalis salinity and Vernalis flow objectives, why are there different EC values among flow alternatives 2, 3, 4, and 6? (SFPUC, SJRG, Stockton)

Reply: The alternatives cause upstream reservoirs to be operated differently which results in different flows at Vernalis throughout the year. Where Vernalis flows differ, EC will differ. Even if Vernalis flows were the same among each of the alternatives, EC would still depend on the relative contribution of Stanislaus River flow and San Joaquin River flow upstream of its confluence with the Stanislaus. This contribution is different for each flow alternative.

DWRSIM uses the following procedure to calculate salinity at Vernalis: DWRSIM first calculates San Joaquin River quality at Maze Road (upstream of the confluence of the San Joaquin and Stanislaus rivers) using a negative-exponential relationship (EC goes down as river flow goes up). For March - September the formula is $EC = 1117182/(Q^{0.62151})$. For October- February, the formula is $EC = 1177354/(Q^{0.62912})$, where Q is San Joaquin River Flow at Maze in AF/month, and EC is in µmhos/cm. DWRSIM then adds in Stanislaus River flow and "local inflow". Vernalis salinity is then calculated using a flow-weighted average assuming Stanislaus River EC is 85 µmhos/cm and local inflow EC is 190 µmhos/cm from March to September and 280 µmhos/cm from October - February. DWRSIM assumes that additional water needed to meet Vernalis salinity objectives comes from New Melones reservoir. The Vernalis salinity objective usually controls operations in July and August; at other times of the year other objectives besides Vernalis EC usually control. Salinity graphs for southern Delta salinity stations for alternatives 2, 3, 4 & 6 show roughly similar values in July and August.

Comment: [page 016R] The final sentence in the final paragraph states, "In the long-term the water quality control actions described in Chapter VIII can be used as mitigation." We believe Chapter VIII is inadequate, and saying it will provide long-term mitigation is inappropriate. (SLDMWA-2)

Reply: Comment noted.

Comment: [page 018R] Salinity output from DWRSIM yields different results than DWRDSM. (CCWD-2)

Reply: As discussed in Chapter VI, Section B.2.b., (revised DEIR p. VI-18), DWRDSM output may show significant violations of salinity objectives. This is caused by differences between the methods used by DWRSIM and DWRDSM to calculate salinity or chloride concentrations. DWRSIM, the operations model, uses a relationship between outflow and chloride or EC (the "G" model) to determine concentrations of these parameters at selected western Delta stations, including the Contra Costa Pumping Plant. DWRSIM makes reservoir releases as necessary to meet the objectives at these locations and DWRSIM output indicates that these objectives are always met. The hydrology output from DWRSIM is used as input to DWRDSM, which uses a more complicated method for calculating salinity and chloride concentrations. The method used by DWRDSM considers other factors such as exports, and uses a time step several orders of magnitude smaller than DWRSIM. Thus, output from DWRDSM may show significant violations of salinity objectives. In summary, the DWRDSM output indicates a need for carriage water, but the DWRSIM model does not presently include a method for calculating carriage water. Although DWRDSM output predicts that salinity objectives at some locations will be violated, in actual operations, the projects would be operated to meet salinity

and chloride objectives in the western Delta under all of the alternatives, and violations would not be expected to occur. Because of the conditions described above, salinity information is generally discussed relative to base case salinity, rather than to the objectives.

Comment: [page 019] The DEIR states that there is no clear environmentally superior alternative in terms of the effects on salinity at specific stations in the Delta. As we read figure VI-14, Alternative 6 never results in a violation of the water quality control standard whereas all the other alternatives result in violations either once or often. What is the basis for concluding there is no environmentally superior alternative? (SDWA)

Reply: Salinity figures in Chapter VI have been revised using the 16-year 1976-1991 hydrology period. The revised figures correct an earlier DWRDSM processing error and provide additional information which supports the conclusions in Chapter VI, section B.2.b. Figure VI-14 (Salinity for San Joaquin River at Airport Bridge (Vernalis) End-of-Month Simulated Values for [6-year] Period) in the DEIR shows DWRDSM modeling results for 1987-1992. These years were all classified as critically dry using the San Joaquin River water year classification system. The new figures show DWRDSM modeling results for 1976 - 1991 "broken out" by San Joaquin water year type into salinity graphs for wet, above normal, dry, and critical years (there are no "below normal" year types occurring between 1976 - 1991). The revised salinity figures for the San Joaquin River at Vernalis show that, with the exception of Alternative 7 in August of dry and critical years, Vernalis salinity objectives are always met by the alternatives. Flow Alternative 7 exceeds the salinity objective in August of dry and critical years because the Alternative has a 70 TAF cap on releases from New Melones Reservoir for salinity control. Other apparent exceedances are insignificant and are attributable to modeling uncertainty. The revised Vernalis salinity figures do not indicate an environmentally superior alternative.

Comment: [page 019] The statement is made in the second paragraph that: "When there is insufficient water in New Melones Reservoir to meet all of the demands, the salinity objectives or requirements are violated." This sentence must be explained for it to have any meaning. (SEWD)

Reply: What the sentence means is this: When the DWRSIM modeling study indicates there is insufficient stored water in New Melones Reservoir, based on operating rules for the reservoir, to meet Vernalis objectives, DWRSIM output shows that the objectives are exceeded. The number of monthly exceedances over the period of record are as follows:

Flow Alternative	Sep – Mar (1000 :mhos/cm)	April - Aug (700 :mhos/cm)	D-1485 Objectives (Year-round) (500 ppm TDS expressed as 860 :mhos/cm)
1	N/A	N/A	0
2	3	27	N/A
3	0	0	N/A
4	0	0	N/A
5	0	21	N/A
6	0	0	N/A
7	11	57	N/A
8	9	37	N/A

Comment: [page 020] The top paragraph on page VI-20 mentions that Alternative 7 includes a cap of 70,000 acre-feet on releases from New Melones Reservoir. Is it the SWRCB's position that an agreement between some but not all of the parties on the San Joaquin River can result in the USBR escaping its permit requirements? Would the SWRCB change the requirement because some parties recommend it? (SDWA)

Reply: The EIR is intended to analyze a broad range of alternatives, including negotiated agreements among some parties. The SWRCB will select a preferred alternative based on the full hearing record.

Comment: [page 020] The fourth line on this page references the 70 TAF cap on releases from New Melones Reservoir for salinity control which Page II-14 footnote 1 said was removed. (SEWD)

Reply: As stated in the beginning of the sentence, the 70 TAF cap on releases from New Melones reservoir on page VI-20 (p. VI-16 of the revised Chapter VI) is in reference to Flow Alternative 7. The footnote on p. II-14 refers to "existing conditions" (Flow Alternative 1), which does not have the 70 TAF cap on releases from New Melones Reservoir for salinity control.

Section B.3. Fish and Aquatic Resources

Comment: [page 016R] There are a number of technical issues associated with Alternative 6 that the DEIR has not addressed. These issues may be beyond the scope of the DEIR at this point in time. They, however, will need to be addressed at some point.

1. The use of Newman Wasteway raises several issues, including:
    a. Sediment contamination and water quality in the wasteway.
    b. Wasteway flow velocity and potential for scour.
    c. Flooding potential near wasteway outlet.
    d. Structural modifications, which may be necessary for recirculation use (dredging, bridge work, etc.).
2. Salmon smolt imprinting on Delta-Mendota Canal water may create problems.
3. High pumping during the pulse flow period may cause entrainment and other fishery impacts.
4. Legal and institutional constraints and considerations associated with recirculation have not been addressed.
5. Complete analysis requires modeling at the half-monthly flow step (e.g., April 15-30 and May 1-15) rather than the monthly time-step level. When the USBR made a similar flow study using a monthly model to simulate the half-monthly flow, it was determined that averaging across the month effectively gave the model two extra weeks to meet the average monthly flow, which in turn allowed the model to deliver more Delta-Mendota Canal water than a half-month period would actually allow. Under these circumstances, the following may occur in the study results:
    a. Less New Melones water would be released than would actually be required.
    b. Delta-Mendota Canal recirculation contribution may be overstated.
    c. April and May Stanislaus River flows may be understated.
    d. Summertime Stanislaus River flows may be overstated. (USDOI)

Reply: 1. The USBR has several alternatives for moving water from the Delta-Mendota canal to the San Joaquin River, some of which may require CEQA/NEPA compliance. The use of Newman Wasteway for conveyance of recirculation water would not likely adversely affect sediment contamination or water quality in the wasteway. Other potential impacts would need to be disclosed in a subsequent environmental document.

2. A discussion of the salmon smolt imprinting problems associated with Flow Alternative 6 (recirculation) has been added to Chapter VI.

3. Pumping at any time could cause entrainment, however project pumping in the south Delta during the pulse flow is similar to the other alternatives since all of the alternatives are limited by the export limits.

4. The DEIR analyzes the physical effects of the proposed alternative on the environment. Controversy exists as to the existence and extent of any legal and institutional constraints on the alternative, making it speculative. If Alternative 6 is adopted, the SWRCB will address any such constraints in its water right decision.

5. The modeling limitations of DWRSIM are described in Chapter IV, and these limitations apply to all of the alternatives.

Comment: [page 020] Thirty one species of non-native fishes are present in the estuary, not approximately 65 as indicated. Ballast water introductions are not accidental; the ship owners now know they are introducing hundreds of species and millions of individuals. (SFPUC)

Reply: Revisions made to text.

Comment: [page 20] The statement that "Approximately 80% of California's commercial fishery depends on species that inhabit or migrate through the estuary (USBR 1997a)" should be checked and verified. Given the extensive commercial fishery for marine coastal species, it is unlikely the statement is correct. (SFPUC, SWC)

Reply: The sentence has been revised to state "A significant proportion of California's commercial fisheries depends on species that inhabit or migrate through the estuary."

Section B.3.a. General Factors

Comment: [page 017R] The text identifies general factors which affect the declines in aquatic resources. In general, the treatment of all factors other than outflow is over generalized and without scientific detail. In particular, food limitations, habitat loss, harvesting, and contamination by pollutants need far more exposition in order to know whether or not the operations of water projects in the Delta can be managed in any way to cause recovery of aquatic resources. (SLDMWA-2)

Reply: This section is only intended as a brief discussion of the factors that will be directly affected by the proposed project. A more detailed discussion appears in the ER which is incorporated by reference. More detailed discussions are also presented for each of the selected species where there is more direct evidence of the effects of each factor. Some factors, such as habitat loss, harvest, and input of contaminants, will not be directly affected by the proposed project and are not included in the analysis.

Comment: [page 18] Several comments stated that the DEIR understated and did not adequately analyze the adverse effects of reverse flows in the south Delta on fishery resources. The adequacy of QWEST as a flow standard to indicate the magnitude of reverse flows was questioned. The

reductions in QWEST in the November through January period under the flow alternatives, particularly in dry water years, were stated to have potential adverse impacts on chinook salmon migrating through the Delta. Comments also stated that the DEIR did not include DWRDSM simulations of the extent and duration of reverse flow conditions in the central and southern Delta channels.

Other comments stated that the adverse effects of reverse flows were over-emphasized in the DEIR. The statement that reverse flows may disorient fish causing increased straying was said to be largely conjectural. Channel flows resulting from tidal filling and draining were stated to be sometimes several orders of magnitude greater than the "net" flow. Therefore, net reverse flows may not have significant impacts. (CCWD, DWR, DFG, SVWU, SWC, YCWA)

Reply: The EIR adequately evaluates the relative effects of the flow alternatives on reverse flow conditions in the south Delta. Evaluation of the entire impact of the CVP and SWP projects on fishery resources in the Delta is outside the scope of the EIR.

The references to disorientation of fish due to reverse flows have been deleted. However, reverse flows may result in increased straying of adult fish. Reverse flows may also entrain eggs, larvae, and juvenile fish into the southern and central Delta where rearing conditions may be less suitable and fish are more vulnerable to entrainment at the export facilities. These statements have been retained in the FEIR.

Although the underlying mechanisms are not thoroughly understood, net reverse flows, as measured by QWEST, have been found to have significant negative relationships with the abundance and survival of some Delta species. QWEST is generally accepted as a surrogate measure for reverse flow conditions in the southern and central Delta channels. In general, as QWEST flows decrease, reverse flow conditions in the southern Delta become more pronounced.

Comment: [page 020] The DEIR fails to rank the relative importance of the considered factors by stating that "…their complex interactions...are not fully understood." While the interactions may not be fully understood, these factors and their interactions are understood well enough to rank them. (SVWU)

Reply: These factors cannot be ranked with general consensus. The purpose of the EIR is to evaluate the relative impacts of various Bay/Delta Plan implementation alternatives on the Bay/Delta environment. To fully evaluate the causes of the decline of fishery resources in the Bay/Delta system is beyond the scope of this document.

Comment: [page 20] The DEIR identifies nine main factors which significantly impact aquatic resources in the Bay/Delta Estuary. Entrainment in the Delta, reverse flows, food limitation, introduced species, and harvesting do not have any direct connection to upstream water users. (Butte Co., SJRG)

Reply: All of these factors are affected, at least indirectly, by all consumptive water users in the Bay/Delta system.

Comment: [page 21] Increases in diversion and subsequent entrainment above Alternative 2 is an impact of the proposed implementation alternative and the impact should be offset.

The DEIR recognizes that flow alternatives "with lower Delta outflow and higher exports have the highest entrainment potential." The DEIR concludes that, because all of the alternatives have higher outflow and lower exports than the base case, there will be no significant impacts on the environment from the adoption of any of the alternatives. Alternatives 2 through 7 may have higher total annual inflows and lower total annual exports than the base case; however, Tables VI-9 and VI-10 indicate the statement is not true on a monthly basis, suggesting the need for a more detailed examination of these flow parameters and consideration of potential fishery impacts.

The DEIR also overlooks the differences in permitted exports among the various flow alternatives. Given the magnitude of potential increases in exports and the biological data indicating that export pumping is the chief cause of the decline of Bay/Delta fisheries, these differences represent potentially significant impacts on the environment from flow alternatives 3, 4, and 5. (DFG, SVWU)

Reply: Alternative 1 is the base case in this analysis.

There is no consensus that export pumping is the primary cause of declining Bay/Delta fisheries. Additional information is included in the FEIR to indicate that certain months have higher exports. In most of these months, higher exports are offset by increases in Delta outflow. October appears to be the one month when exports are increased and Delta outflow is decreased from the base case. However, these impacts are compensated by the decreased exports and increased Delta outflow in the critical spring months.

Comment: [page 021] The document avoids describing the existing numbers on the export facilities' take of fish and then states that agricultural diversions 'may' account for significant fish losses in the Delta. SDWA does not believe this is supported by reliable evidence and believes that the harm done by the projects should be accurately described. (SDWA)

Reply: It is not necessary to include specific fish salvage data from the project facilities in the EIR; such data are, however, included in the ER. There currently is very limited information available on the magnitude of entrainment in other Delta diversions. Cumulatively, entrainment in other Delta agricultural diversions may be significant due to the large volume diverted.

Comment: [page 020] In regard to outflow, the DEIR indicates the seasonal pattern of the Delta outflow appears to be more influential to the estuarine organisms than annual volume. In fact, prior to the project operations, there were many times during the summer months there was little or no Delta inflow or outflow. (SVWU)

Reply: Low flow conditions did occur during the summer months prior to Delta project operations. However, the conclusion that low flow conditions occurred "many times" is unsubstantiated.

Comment: [page 020] The discussion of "Delta Outflow" should note that equally important functions of outflow include inundation of floodplain, dilution or mobilization of toxic materials and modifying salinities in the Estuary. (DWR)

Reply: The second sentence of this paragraph identifies some of the other important physical factors associated with outflow. Habitat availability for aquatic organisms and floodplain inundation were added to this sentence.

Comment: [page 020] Last sentence on page VI-20 and VI-21. These statements over-generalize the conditions in the Delta. Inflows, or flow volumes in the inflowing rivers do not alter downstream migration rates of salmon smolts, for instance, except during extreme events. Inflows and exports are important factors for species that have free floating embryo and/or larval stages that are dependent upon downstream flows for transport to the estuary, such as delta smelt, longfin smelt and striped bass. In the central and southern Delta, the overwhelming consideration for such species and lifestages are changes in hydraulics due to the export pumps. (SVWU)

Reply: This paragraph is intended as general information. The upstream flow volumes and timing affect the migration pattern of anadromous fish in and out of the Delta. For example, pulse flows are commonly used to imitate high flow events which may stimulate initiation of migration and improve survival. The hydraulics in the southern and central portions of the Delta are principally influenced by tides, inflow, and exports. The effects of exports are more pronounced as one moves closer to the pumps. However, the hydraulics are still tied to inflow and outflow.

Comment: [page 020] Outflow, first sentence. We disagree with the statement that "The seasonal pattern and annual volume of Delta outflow influences populations of aquatic organisms that evolved in and are dependent on the Delta." Outflow may be correlated with factors that affect the survival of Delta aquatic life, but so are other factors. Correlation does not necessarily imply causation, and correlation should not be substituted for the identification of an underlying mechanism. (SVWU)

Reply: The first sentence has been changed to read "The seasonal pattern and annual volume of Delta outflow affects the abundance of many aquatic organisms dependent on the Delta." While correlation does not necessarily imply causation, there are significant positive relationships between Delta outflow and abundance for many aquatic species. There are several theories currently under investigation of the underlying mechanisms for the relationship between Delta outflow and abundance.

Comment: [page 020] The discussion of outflow effects is a bit simplistic. Annual volume can be very important to some organisms, especially if most of it occurs in a short period of time. The outflow-distribution relationship for fishes is not just one of simple distance.

Extreme events do push some fish into the Gulf of the Farallons but the flow-distribution relationship at intermediate flows is not so simple. What is meant by "improved estuarine conditions" if base flows are increased in spring months? (SFPUC)

Reply: The section on outflow effects is intended only to be a general discussion. The last sentence in the paragraph has been revised to read "which should improve conditions for spawning and survival of aquatic resources in this critical period."

Comment: [page 021] Do you have a reference for the statement that "[t]he reduction in spring outflows is considered to have the most adverse impacts on the aquatic resources"? (SJRG)

Reply: The sentence was revised to remove "the most" from the statement.

Comment: [page 021] The entrainment from the SWP and CVP projects is much more significant than entrainment by in-Delta users because of the reverse flow effects from the two pumping plant

intakes located in the southwest Delta. The in-Delta diversions may have localized entrainment effects, but do not influence Delta-wide hydraulics in the way that a single area of diversion in the southwest Delta does. (SVWU)

Reply: Comment noted. The text has been revised to clarify that in-Delta diversions have more localized effects than the CVP and SWP. The effects of reverse flows on aquatic resources are addressed in the following section.

Comment: [page 021] "Currently SWP and CVP exports can reach approximately 10,000 cfs most of the year with higher levels possible in the winter." This statement is not correct given the conditions imposed on SWP and CVP exports through the Delta Accord. Additional restrictions imposed by the USFWS Delta Smelt Biological Opinion also serve to limit SWP/CVP exports, particularly during the critical spring period. The text should be modified to accurately reflect export conditions, particularly during the spring (February - June) rather than giving the impression that SWP/CVP exports are 10,000 cfs throughout this period in all years. (SWC)

Reply: This statement is a general informational comment intended to give the reader some context in which to view the entrainment issue. For at least eleven months of the year, the SWP and the CVP can export 10,000 cfs if Delta inflow is adequate. These eleven months constitute "most of the year."

Comment: [page 021] A citation should be provided for the technical basis used to estimate that agricultural diversions from the Delta are approximately 4,000 cfs. (SWC)

Reply: The figure is based on DAYFLOW Delta gross channel depletion estimates which are used in calculating NDOI (as referenced in Figure II-3 of the DEIR).

Comment: [page 021] The discussion of reverse flows is only addressed in passive references that do not address known flow relationships. Describing reverse flow impacts as "controversial" and the passive reference that reverse flows "MAY [emphasis added] carry eggs and larvae and small fish into the central and southern Delta reducing their survival because of poor rearing conditions, increased predation, and increasing entrainment in export facilities" are mischaracterizations. The principal dispute in this topic area has been whether the QWEST term, a means of quantifying reverse flow, was workable as a flow standard. The lack of distinguishable reverse flow impacts between flow alternatives coincides with the lack of a significant range of curtailments of CVP and SWP exports. The DEIR section on entrainment concludes that because the flow alternatives have greater outflow and lower exports than the D-1485 "base case" conditions, entrainment under the Flow Alternatives should not have a significant environmental effect. This is an overly broad conclusion and begs the question of the relative merits of Flow Alternatives 2 through 7. Tables V-1 and V-2 demonstrate that Flow Alternative 5 has a significant increase in diversions relative to Flow Alternative 2. Moreover, if the DEIR had included the flow alternative premise of full curtailments of non-CVP/SWP water rights instead of the premise of contracting for CVP/SWP supplies, Flow Alternatives 3 and 4 would have also shown significant diversion increases and, thus, would indicate higher levels of entrainment than Flow Alternative 2. Thus, the environmental impacts of entrainment have not been adequately addressed in the DEIR. (YCWA-1A)

Reply: See general comment for Chapter VI, Section B.3.a, Page 18. Tables V-1 and V-2 show that Alternative 5 has a decrease in deliveries compared to Alternative 2 during the 73-year period and an increase in the critical period. In the same tables, non-CVP and SWP supplies for Alternative 5 show

reductions in deliveries compared to Alternative 2 for both the 73-year period and the critical period. Tables VI-9 and VI-10 show that Alternative 5 has higher exports annually than Alternative 2 during the 73-year period and the critical period.

Comment: [page 019R] This paragraph identifies yet another severe limitation of Flow Alternative 6, which is that recycled water is likely to increase San Joaquin River temperatures and significantly affect migrating San Joaquin River smolts, an impact which cannot be mitigated. (SLDMWA-2)

Reply: Comment noted.

Comment: [page 022] Alternative 6 (San Joaquin recirculation) impacts associated with potential increases in water temperature are described as not mitigable. This statement does not take into consideration feasible options for partial implementation of Alternative 6 to avoid or minimize impacts to San Joaquin salmon smolts. For instance, limiting this option to periods of the year (e.g. July through October) when San Joaquin salmon are not present and/or monitoring the effects of releases to comply with SWRCB or Regional Board objectives are all possible mitigation measures that could be considered. (DFG)

Reply: The comment suggests a different alternative for consideration. The alternatives in the EIR were designed to represent a range of water management options for meeting the water quality objectives in the 1995 Bay/Delta Plan. The alternative adopted will be within the range of the alternatives described in the EIR. Real-time operational changes in response to monitoring could be used to mitigate impacts to fish and wildlife resources under any of the alternatives.

Comment: [page 022] What is meant by "natural temperatures"? (SFPUC)

Reply: The term "natural temperatures" has been replaced by "temperature regimes that existed under unimpaired conditions".

Comment: [page 023] How do higher outflows and reduced export increase food supplies for fish? This is not as obvious as it might seem. (SFPUC)

Reply: Higher flows increase the amount of carbon that enters the system and that can be converted into food. Increased exports remove more of the carbon and primary producers from the system, reducing food supplies. This can be demonstrated from the Particulate Organic Carbon outflow/abundance relationship described in the Environmental Report. In addition, entrainment would increase with exports, reducing available food organisms.

Comment: [page 023] The DEIR should note that the various flow alternatives may have a significant effect on wetted channel periphery and a resulting significant effect on fish, wildlife, and plants. This may translate into a requirement for mitigation. (USDOI)

Reply: The 2nd paragraph under "Habitat Loss" has been revised to read "Flow changes may result in changes in water elevations and wetted channel periphery. Changes in wetted periphery may affect the availability of habitat for certain species of fish, such as Sacramento splittail, that depend on newly flooded areas for spawning and early rearing." A third paragraph has been added: "The project

alternatives are not expected to have significant effects on available habitat. The alternatives will not result in direct loss of physical habitat. Changes in wetted channel periphery due to flow changes are expected to be slight under the project alternatives compared to the base case. In the spring months, there may be a slight increase in wetted periphery and available habitat under Alternatives 2 - 8, since Delta outflow in February through June will be increased compared to the base case."

Comment: [page 023] The general statements under habitat loss are too general to be useful. (SFPUC)

Reply: Comment noted. This paragraph is intended to provide a general description of habitat loss.

Comment: [page 023] Introduced species. 2nd sentence. Eliminate "the potential to." There is no question that introduced species have caused major shifts in food web dynamics.

The adverse effects listed are only a few of those possible. Are there in fact others? There is no evidence that increased outflow will significantly affect the Asiatic clam (population). During high outflow periods, it suffers (increased) mortality, but the effect is temporary. (SFPUC)

Reply: Revisions made to text.

Comment: [page 023] The Asiatic clam in Suisun Bay needs to be mentioned specifically here. (SFPUC)

Reply: Addition made to text.

Comment: [page 024] Except for salmon and white sturgeon, there is no evidence that harvesting has contributed to population declines, at least in recent years. The DEIR's statement that low outflows may concentrate some organisms and make them more vulnerable to harvest is speculation. (SFPUC)

Reply: Harvest is a factor contributing to the decline of several species in the Bay/Delta system. The second paragraph in the harvest section has been revised to read "The flow alternatives will have no direct effects on harvest of Bay/Delta species."

Comment: [page 024] Modest changes in salinity, such as the differences among the alternatives, are unlikely to affect harvest rate. We suggest that the paragraph be modified with text to this effect. (DWR)

Reply: The second paragraph in the harvest section has been revised to read "The flow alternatives will have no direct effects on harvest of Bay/Delta species."

Comment: [page 024] References should be provided to support the statement "Many contaminants naturally accumulate in the entrapment zone of the Estuary, which is preferred by many Delta organisms, increasing exposure." (SWC)

Reply: Reference added to text (SFEP 1992a).

Comment: [page 024] The DEIR should mention that pesticides may flow through the estuary in "slugs" and that flow can affect contaminant concentration. (SFPUC)

Reply: The following sentence was added to paragraph 6: "Pesticides from urban and agricultural runoff are also of concern." Paragraph 7 has been revised to read, "The flow alternatives do not directly affect contaminant input, concentrations, or effects. Flow alternatives may affect pollutant concentrations by altering dilution rates; however, changes in pollutant concentrations are expected to be minor. Therefore, the alternatives are unlikely to have a significant effect on contaminant problems. No mitigation measures are required."

Comment: [page 024] Paragraph 7. It should be noted that this is a conclusion statement, made without supporting information. It is possible that the flow alternatives could have some effect on contaminant concentrations. In general, given a fixed input of contaminant, the higher the flow, the more dilute the contaminant. The USFWS recommends that this paragraph be revised. (USDOI)

Reply: This paragraph has been revised to read, "The flow alternatives do not directly affect contaminant input, concentrations, or effects. Flow alternatives may affect pollutant concentrations by altering dilution rates; however, changes in pollutant concentrations are expected to be minor. Therefore, the alternatives are unlikely to have a significant effect on contaminant problems. No mitigation measures are required."

Section B.3.b. Impacts of Alternatives on Selected Species

Comment: [page 22] The discussion of Central Valley chinook salmon and steelhead should be updated to reflect the current listing status of the various Environmentally Significant Units under the state and federal endangered species acts. (SFPUC, SWC)

Reply: Text has been revised to include the current federal and state listing status of steelhead and chinook salmon in the Central Valley.

Comment: [page 022R] The DEIR fails to analyze or discuss the alternatives with respect to meeting the "salmon doubling" (narrative) objective in the 1995 Bay/Delta Plan. We believe it is appropriate and crucial for the SWRCB to assess, with the best tools available, the relative contributions of the different alternatives, or combinations thereof, towards meeting the State-mandated doubling objective. It appears that not all the alternatives would provide equivalent benefits either upstream or in the Delta toward meeting the doubling objective. The final EIR should address this issue. (DFG, DFG-2)

Reply: See general comment for Chapter II, Section C, Page 1. The effects of the alternatives on flow, water temperature, and aquatic habitat were modeled for upstream areas; effects of the alternatives on salmon smolt survival through the Delta were also modeled. It is not possible to predict with any accuracy the relative effects of the alternatives on chinook salmon population sizes. Effects on relative survival indices are predicted.

Comment: [page 023R] Sufficient information exists to support a conclusion that ocean harvest has a significant effect on salmon populations. (WWD-2)

Reply: Comment noted. Although ocean harvest has a significant effect on salmon populations, it is not directly affected by the flow alternatives considered in the EIR.

Comment: [page 025] 2nd paragraph. After the first sentence, add the following: "Note, however, the previous comments about the limitations of the model." (DWR)

Reply: An additional statement will be added to the last sentence of the first paragraph referencing the model criticisms discussed in Chapter IV. For further discussion, see response to comments for Chapter IV, Section E.1, Page 12.

Comment: [page 025] The salmon smolt survival index says nothing about the status and relative condition of the natural population of salmon in the basin. The index is merely a mathematical estimate of Delta smolt survival based on coded wire tag releases of hatchery smolts and their subsequent recapture. The index does not address upstream habitat conditions, ocean condition, or harvest rates. It is inappropriate to ignore other factors affecting salmon and instead use the salmon smolt survival index as a basis for requiring additional San Joaquin River flows in an effort to improve salmon populations. (SJRG)

Reply: The flow alternatives under consideration will not affect ocean conditions or harvest rates. The use of the models is intended to qualitatively compare the effects of the proposed flow alternatives on in-Delta survival of chinook salmon. Effects of the alternatives on aquatic habitat in upstream areas is described in the next section of Chapter VI. Also see comment for Chapter IV, Section E.1, Page 12 for discussion of the chinook salmon models.

Comment: [page 025] The fish population discussion provides uneven coverage of the species and drainages, with some species and drainages discussed extensively, others much less extensively, and others not at all. Also, the DEIR does not evaluate some of the key anadromous fish species such as sturgeon, American shad, and steelhead. Revision of the DEIR should review the Anadromous Fish Restoration Program (AFRP) Working Paper to obtain further information to broaden the fish discussion, including flow and juvenile American shad index, and flow related to sturgeon abundance. Unfortunately, that information may not be sufficiently quantitative to allow for use in comparing alternatives. (USDOI)

Reply: Data were available for detailed analysis on only some of the major tributaries in the Bay/Delta system. Analyses of relationships on these tributaries were intended to be surrogates for other streams that could not be evaluated in detail. In upstream areas, the ecosystem effects of changes in flow were analyzed using the Range of Variability Approach. The effects of changes in flow and diversions in the Delta were analyzed for all species for which quantitative relationships with those factors were available.

Comment: [page 025] The effects of flow on chinook salmon habitat for spawning, egg incubation, juvenile rearing, and outmigration, in addition to the effects of flow variation on survival are complex and dynamic. Salmon production (juvenile salmon abundance within a year) generally is higher with increased flow, which may reflect a variety of factors. Exceptionally high flows within the upstream

spawning areas may also be detrimental to salmon production as a result of scouring eggs from redds. The statement in the EIR should be expanded to provide additional information regarding the dynamics and variability in the effect of flow on salmon within the freshwater environment for various lifestages, and should not simply rely on general statements contained in USBR (1997a) regarding these key issues. (SWC)

Reply: This discussion of flow-related impacts (Section b) is intended to provide general background on the effects of flow on chinook salmon in the Delta that may be affected by the project alternatives. It is not intended to be a detailed discussion of the effects of flow on all chinook salmon life stages. The impact analysis presented in this section focuses on the effects of flow and diversions on smolt survival through the Delta, which will be affected by the flow alternatives. Impacts on the aquatic ecosystem in upstream areas are described in Section C. This analysis emphasizes the importance of flow dynamics and variability in maintaining upstream aquatic ecosystems. We concur that many other factors affect the overall size of salmon populations.

Page VI-25, paragraph 5, last sentence, has been revised to read, "Higher flow rates generally increase juvenile salmon survival through the Delta by decreasing migration time, reducing exposure to diversions, and maintaining favorable water quality and habitat conditions during migration."

Comment: [page 025] The DEIR should explain that the Four-Pump Mitigation Agreement for the SWP and the Tracy Agreement for the CVP identify entrainment losses of juvenile chinook salmon and provide for mitigation of direct losses. The EIR text should also explicitly note that the estimated losses are for salmon fry (<2 inches in length) and smolts (<4 inches in length), to avoid any confusion that these could be adult fish. (SWC)

Reply: It is not necessary to discuss the mitigation agreements in the FEIR, since the focus of this section is on the impacts of the alternatives on selected species. The text has been revised to indicate that these estimates are for fry and smolts, not adults.

Comment: [page 025] Regarding salvage at the Delta pumps, Sacramento River runs appear to be much larger and, under some conditions, fish from the Sacramento River system make up a greater proportion of the fish salvaged at the pumps than those from the San Joaquin River basin. (USDOI)

Reply: The sentence has been reworded to state "Generally, most salmon salvaged at the Delta pumps are from the San Joaquin basin". We acknowledge that there may be times that Sacramento River origin fish make up a greater proportion of the fish salvaged.

Comment: [page 025] Flow Alternatives 3, 4, and 5 will increase exports and adversely impact the spring-run chinook salmon. The DEIR omits the impacts of these alternatives and misleads the public as to the actual impacts to spring-run that will result if these flow alternatives are implemented. (FWA)

Reply: Changes in exports due to the flow alternatives are discussed in this chapter. Net exports will be reduced under Alternatives 3, 4, and 5 compared to the base case. Results of the USFWS model for spring-run chinook salmon, young-of-the-year and yearlings, have been included in the FEIR.

Comment: [page 025] We have concerns about the conclusions on significant impacts for several species such as San Joaquin fall-run chinook salmon and spring-run chinook salmon. The document should conclude that some alternatives will result in significant adverse effects to San Joaquin fall-run chinook salmon and spring-run chinook salmon. (DFG)

Reply: The FEIR includes modeling results for survival of young-of-the-year and yearling spring-run salmon migrating through the Delta, to evaluate impacts of the flow and Joint POD alternatives. For the flow alternatives, results of these models indicate that there are no significant adverse impacts to any of the chinook salmon runs compared to the base case condition; in most water years, the flow alternatives result in higher survival indices than in the base case. For the Joint POD alternatives, no significant adverse impacts were predicted on survival of spring-run young-of-the-year or yearlings.

The effects of the flow alternatives on survival of San Joaquin fall-run salmon migrating through the Delta were modeled. Results of these models indicate that there are no significant adverse impacts to San Joaquin fall-run due to implementation of the flow alternatives. Predicted survival indices were higher under Flow Alternatives 2 - 8 than in the base case, except for Alternative 7 in a wet water year.

Comment: [page 025] The DEIR states that losses of chinook salmon at the SWP and CVP Delta export facilities typically range from 400,000 to 800,000 per year (USFWS 1995). The DEIR does not provide estimated losses from other diversions and fails to adequately support the statement. In the second paragraph on page VI-29, the DEIR states: "Entrainment losses at agricultural diversions are unknown but assumed to be significant." (SVWU)

Reply: Revisions made to text. The estimate of chinook salmon losses of 400,000 to 800,000 per year was obtained from USBR (1997). Very little data are available on entrainment at diversions other than the CVP and SWP facilities. The sentence in the second paragraph on page VI-29 has been clarified by adding "...because of the large number of diversions (1,800) and total volume (4,000 cfs)."

Comment: [page 025] The DEIR implies the entrainment losses during the fall/winter are inconsequential because the number of fish entrained is not large. The DFG is concerned about all losses of salmon and will review such losses, including entrainment losses, on a case by case basis and determine their significance as appropriate. Losses of spring and winter-run salmon will be assessed by DFG pursuant to CESA. (DFG)

Reply: Revisions have been made to the text incorporating these concerns. The effects of the flow alternatives on survival of winter and spring-run chinook salmon (young-of-the-year and yearlings) through the Delta were modeled in the FEIR.

Comment: [page 25] There is significant potential for the Flow and Joint POD Alternatives to impact spring-run chinook salmon. The DEIR did not adequately evaluate potential impacts to spring-run. The evaluation of spring-run impacts needs to account for both the yearling migration through the Delta as well as juvenile rearing and smolt emigration. Unlike some species which exist as one population in the Delta, spring run occur in the Delta both as yearlings in the October to February period and as young-of-the-year outmigrants in the spring. For single population species, negative effects in one or two months may be balanced out by positive effects on the same population in other months. For spring-run, however, Joint Points-related fall/winter impacts to spring run will

affect the Mill and Deer creek populations primarily since they tend to emigrate as yearlings. Spring month benefits accruing from Joint Points use will affect mostly spring run from the other stream populations. (DFG, RCRC)

Reply: The effects of the Flow and JPOD alternatives on the through-Delta survival of spring-run chinook salmon (young-of-the-year and yearlings) have been modeled; results are included in Chapters VI and XIII of the FEIR. Chapter XIII text has been revised to more fully describe potential impacts to spring-run chinook from implementation of the JPOD Alternatives. Results of the USFWS salmon smolt survival model for the Joint POD alternatives indicate that survival indices for Alternatives 2 - 9 are generally very similar, and higher than in Alternative 1, for all chinook salmon runs.

Comment: [page 026] 1st paragraph. Replace the last two sentences with the following: "As noted in Chapter I, the models have some important limitations, so it is probably best to compare the results qualitatively. Given the fixed temperatures used in the model, the best survival can be expected with higher flows and Delta Cross Channel Closure." (DWR)

Reply: Revision made to text based on recommended change.

Comment: [page 026] The text of the EIR discusses the use of multiple-regression techniques and coded-wire tag smolt survival studies as the basis for establishing the salmon smolt survival models. We are not aware of any such detailed investigations or analyses that would support the development of a survival model, specifically for either late fall-run or winter-run chinook salmon. The technical data upon which these models have been based should be documented as part of the EIR, and made available for peer review. In the event that data from fall-run chinook salmon studies, conducted during the spring, were used as a surrogate for developing estimates of late fall- and winter-run survival on the Sacramento River, this should be noted and documented as part of the EIR. The existing regression models for fall-run salmon are strongly influenced by water temperatures during the spring.

Migration times for other races such as winter-run, occur during periods of the year when temperature is not thought to be a key issue, and hence the development of a model based on fall-run coded-wire tag survival studies would not be representative or an appropriate surrogate for use in these analyses. The EIR should contain additional documentation on the actual data and formulation of the models, as described.

Furthermore, there is currently considerable debate and discussion regarding the effects of flow on salmon smolt survival from the San Joaquin River within the controllable range being evaluated as part of the EIR. The effects of flow on San Joaquin salmon smolt survival is part of the underpinning for the proposed VAMP testing program. (SWC)

Reply: More detailed documentation of the smolt survival models has been included in Chapter IV of the FEIR. Primary references for the Delta smolt survival models are Kjelson et al 1989 and USFWS 1992, for the Sacramento River, and Brandes 1994, for the San Joaquin River. The models are based on survival indices generated from coded-wire-tagged (CWT) fall-run hatchery smolts released at various locations in the Delta and recovered within a few weeks after release by midwater trawl at Chipps Island. Survival indices were calculated based on the number recovered at Chipps Island corrected for effort in both time and space.

Both the Sacramento and San Joaquin models split the Delta into various reaches and use backward-stepping multiple-regression analyses to identify environmental variables (exports, flows, and temperature) important to survival in each reach. Professional judgement by the model authors was used to some extent in choosing which variables were considered. Both models assume that smolts enter the various reaches of the model in proportion to flow.

The smolt survival model, developed for fall-run smolts emigrating from the Sacramento River Basin, was slightly modified to better index the survival of Sacramento River juvenile winter-run, late fall-run, and spring-run chinook salmon in the Delta. The period of occurrence of each race in the Delta and associated temperature conditions were incorporated into the model.

Also see response to comment for Chapter IV, Section E.1, Page 12 for further discussion.

References:
Kjelson, M.A., S. Greene, and P. Brandes. 1989. A model for estimating mortality and survival of fall-run chinook salmon smolts in the Sacramento River Delta between Sacramento and Chipps Island. U.S. Fish and Wildlife Service, Stockton, CA.

U.S. Fish and Wildlife Service. 1992. Measures to improve the protection of chinook salmon in the Sacramento/San Joaquin River Delta (WRINT USFWS-7). Expert testimony of U.S. Fish and Wildlife Service on chinook salmon technical information for State Water Resources Control Board Water Rights Phase of the Bay/Delta Estuary Proceedings. July 6, 1992.

Comment: [page 026] The DFG disagrees that the alternatives will not affect rearing habitat for chinook salmon. The balance of inflow among the Delta tributaries to achieve objectives in the Delta could affect habitat suitability for both salmon rearing and migration. Any analysis of such impacts will depend on assumptions about when salmon may be in the Delta, hence, these assumptions should be specified. (DFG)

Reply: The period of occurrence of each lifestage/race of chinook salmon in the Delta has been included in the FEIR, in Table III-7. Migration and rearing habitat for chinook salmon in the Delta may be affected by the flow alternatives. Revision has been made to the text to address this concern. Factors affecting migration have been included in the analysis of smolt survival through the Delta. The effects of the flow alternatives on rearing habitat for chinook salmon in the Delta could not be effectively evaluated, because models describing the relationship between flow and rearing habitat have not been developed.

Comment: [page 026] Paragraph 2, line 7 should be revised to read: "difference in smolt survival indices among the other alternatives for each salmon run." (USDOI)

Reply: This section has been revised in the FEIR.

Comment: [page 27] The DEIR incorrectly states that Delta diversions including SWP/CVP exports affect splittail populations by entrainment and by impacting temporarily flooded habitat. The text should be revised. (DWR, SFPUC, SWC)

Reply: Additional information will be included in the FEIR that describes the relationship of splittail abundance and inundation of flooded habitat. Recent work by Sommer et. al, 1997, suggests that

Sacramento splittail abundance is more closely associated with flood plain inundation than Delta outflow. However, the relationship between abundance and outflow is significant, and can be used to predict the effects of the flow alternatives on splittail abundance. The extent of available splittail spawning habitat is influenced by upstream storage and diversions including the CVP and SWP operations. The CVPIA PEIS acknowledges this on page II-251. The sentence will be modified to state that the operation of upstream storage reservoirs and diversions, including SWP and CVP facilities, may adversely affect spawning by reducing freshwater flows and the availability of temporarily flooded habitat. The discussion regarding entrainment has been deleted.

Comment: [page 28] If the flows and exports are the same for all of the flow alternatives in the DEIR and are the same as those evaluated in the ER for the 1995 plan, why do the predicted salmon smolt survival indices vary among the alternatives and vary from the ER? (SJRG)

Reply: Although the flow and export objectives are constant, the modeled flows and exports vary between alternatives and vary between the DEIR and the ER. DWRSIM has been updated since the studies reported in the ER were performed. Some of the underlying assumptions have also changed from those in the ER studies. Flows and exports vary among the alternatives because the flow and export objectives do not always control project operations.

Comment: [page 028] How were the San Joaquin River flows under Alternative 7 modeled? See our previous comment at page II 33. If the SWRCB assumed flows equal to the 1995 Bay Delta Plan flows, it would seem that the SSI under Alternative 7 should be the same as Alternatives 2, 3, and 4. (SJRG)

Reply: A complete description of Flow Alternative 7 is provided in Chapter II of the FEIR; detailed assumptions used in DWRSIM flow modeling for Alternative 7 are provided in Volume 2, Appendix 2 of the FEIR. Under Alternative 7, the flow objectives in the Bay/Delta Plan for the San Joaquin River at Vernalis were replaced by minimum flows at Vernalis in the Letter of Intent. This resulted in slight differences in predicted salmon smolt survival indices for Alternative 7.

Comment: [page 028] The EIR shows that the Old River Barrier alone with baseline flows (Alternative 1) provides a greater increase to the protection of salmon smolts than providing the incremental flows associated with Flow Alternatives 2, 3, 4, 6, or 7 without the barrier. Comparison of Figures VI-21 and VI-22 shows an SSI of 0.14 under Alternative 1 with an Old River Barrier as compared to an SSI of only 0.12 under Alternatives 2, 3, 4, and 6 with no barrier. The need for the barrier is evident in Figure VI-21: the SSI only increases 0.01 between the base case (Alternative 1) and Alternatives 2, 3, and 4 (full compliance). It is both unreasonable and a waste of water to require the San Joaquin River basin users to provide so much water when an alternative with no additional water cost and minimal environmental costs provides a significantly greater benefit. (SJRG)

Reply: Comment noted. The combination of closure of the barrier at the Head of Old River and increased flows are expected to result in improved salmon smolt survival in comparison to barrier operation alone.

Comment: [page 028] Figures VI-21 and VI-22 should use the same vertical scale. It is misleading to show the same information on different scales. (SJRG)

Reply: Revision made to figures.

Comment: [page 028] The scientific studies used to determine the importance of delta smelt as a food resource for salmon and steelhead within the Bay/Delta system should be referenced. Delta smelt are a component of the diet of species such as sub-adult and adult striped bass. Since the majority of chinook salmon emigrate through the Delta as fry and smolts, they would not be expected to prey on delta smelt in substantial numbers. Yearling chinook salmon and steelhead may prey on delta smelt, however the residence time of these yearlings within the Delta environment is relatively short. Adult salmon and steelhead may also forage on delta smelt incidentally, however the importance of delta smelt in the diet of these adult fish is not expected to be significant. (SWC)

Reply: Comment noted. The sentence regarding delta smelt as a food supply for salmon and steelhead has been deleted.

Comment: [page 028] Delta smelt were once one of the most abundant fish in the estuary. They are not an important food item for commercially valuable predator species like salmon and steelhead. The annual smelt movement is not "inconsistent" but it is hard to predict because of lack of knowledge. (SFPUC)

Reply: Revisions made to text.

Comment: [page 29] The use of correlation analyses between copper application and delta smelt abundance suggests contaminant effects on delta smelt survival. Although many of the investigators speculate that contaminants may be a significant factor, the scientific data necessary to support such a finding are not yet available. (SFPUC, SWC)

Reply: Revision made to text to reflect the preliminary nature of the contaminants study: "Contaminants have also been identified to have potential population-level effects on delta smelt abundance. An inverse relationship between copper applications to rice fields and delta smelt midwater trawl abundance has been identified in a preliminary study (IEP 1996)."

Comment: [page 029] The basis for the statement "Reduced Delta outflow is thought to have greater effects on smelt abundance than entrainment (USBR 1997a)" should be critically reviewed. After extensive analysis and discussion, the delta smelt Recovery Team was unable to quantitatively prioritize the significance of changes in Delta outflow versus entrainment losses as factors influencing delta smelt population abundance. The data and analyses upon which the statement are based should be referenced and subject to scientific peer review. (SWC)

Reply: There is a positive relationship between Delta outflow and delta smelt abundance. Although it is likely that losses of delta smelt to entrainment are important (especially in dry years), analysis by DWR and DFG have failed to find a significant relationship between salvage and subsequent abundance of delta smelt (DWR and USBR 1993 from USFWS 1996 Recovery Plan for the Sacramento/San Joaquin Delta Native Fishes). Since there is scientific uncertainty about the priority of the factors, the sentence has been revised to read, "Reduced Delta outflow also has a significant effect on smelt abundance."

Comment: [page 029] A benefit of flows to delta smelt is movement of larvae and juvenile fish from upstream areas to suitable rearing habitat in Suisun Bay. This movement results from physical transport of larvae and behavioral cues to free-swimming juvenile fish. Delta smelt may spawn in different geographic areas of the Delta and in different months on a yearly basis; the location and timing of flows to move larval and juvenile fish is critical. The DEIR should analyze and compare the ability of each alternative to allow for flows from different tributaries in different months of the year. (USDOI)

Reply: The SWRCB included flows from the major tributaries by alternative and month in Chapter VI of the DEIR. Which areas or specific times delta smelt will spawn in the upcoming years cannot be predicted. Because of these variables, a relatively balanced tributary inflow approach is probably best. The FEIR includes a qualitative summary of fishery impacts caused by flow distributions in the system. For example, when the primary spawning areas are in the lower San Joaquin River as in 1997, Flow Alternative 5 would be expected to provide the best flushing flows that would move the eggs and larvae in to preferred rearing habitat.

Comment: [page 029] Increased exports and the associated adverse changes in the position of X2, and reductions in net westerly flows measured by QWEST are all important factors affecting the abundance of delta smelt. The statement that the USFWS determined that the 1995 Bay/Delta Plan would not jeopardize the delta smelt should be clarified. The Bay/Delta Accord was evaluated using the current SWP/CVP facility configuration and operations. This DEIR is evaluating methods for implementation, including use of joint points of diversion that could affect that determination. (DFG)

Reply: Revisions made to text.

Comment: [page 029] Replace the third paragraph with: "Outflow controls the location of the entrapment zone, an important part of the habitat of delta smelt. There is a weak, positive correlation between abundance and the number of spring days that the entrapment zone remains in Suisun Bay (IEP 1997). Reduced outflow shifts the distribution of smelt into upstream channels, reducing the available habitat and increasing risks of predation, entrainment and contaminant effects." (DWR)

Reply: The text has been revised to incorporate the information.

Comment: [page 030] The statement that "Adequate flows reduce predation because the smelt are more dispersed, the water is more turbid, and it increases food production (USBR 1997a)" is not supported by technical analysis or scientific data. (SWC)

Reply: This sentence has been deleted.

Comment: [page 030] The analysis, although useful for comparing alternatives, fails to address issues such as variation in the regression analysis, and the fact that a variety of other factors interact with spring Delta outflow to influence the abundance of longfin smelt. (SWC)

Reply: See response to comment for Chapter IV, Section E.2, Page 12 for a discussion of the outflow/abundance relationships. Small differences in predicted abundance indices are probably not significant. Factors other than outflow affect the abundance of longfin smelt, but relationships with

other factors are not available to predict smelt abundance. Also, the flow alternatives will have direct impacts on Delta outflow, but may not have direct impacts on other factors affecting abundance.

Comment: [page 030] Figure VI-23 shows that all of the flow alternatives have a higher longfin smelt abundance index than the base case. What is the significance of an increase in the abundance index? The EIR only shows an increase or decrease without explaining its significance. Why is an index of 3879 better than an index of 3794? It is interesting that an alternative that proposes less flow on the San Joaquin River (Alternative 7) results in a higher index than the higher flows proposed in Alternatives 2, 3, 4, and 6. The EIR is deficient in that it fails to disclose and evaluate the impacts of the alternatives. (Pub. Res. Code § 21002; 14 Cal. Code Regs. § 15126(d).) Without more, the fact that a particular alternative produces an abundance index higher than another alternative is meaningless. The SWRCB has presented only a bare conclusion without an explanation of its factual and analytical basis. (Pub. Res. Code § 21002; 14 Cal. Code Regs. § 15126(d).) (SJRG)

Reply: The significance of the abundance indices are discussed in response to comment for Chapter IV, Section E.2, Page 12. A clarifying statement is included in Chapter IV that discusses the outflow/abundance relationships and their significance.

The abundance index for longfin smelt for Alternative 2 is less than that for alternatives 3 and 4 because the outflow for Alternative 2 is slightly less in the March to May period. Alternative 7 outflow was also slightly higher during this period which translated into a slightly higher abundance index.

Comment: [page 030] There is little basis for the statement "Higher flows...drive aggressive saltwater fish species from the bays and minimizes competition and predation on longfin smelt." (SFPUC)

Reply: This sentence has been deleted.

Comment: [page 030] The paragraph starting with "29A significant Positive..." should be revised to delete "29." (SWC)

Reply: The EIR has been changed accordingly.

Comment: [page 030] Delete the second and fourth sentences of the first paragraph. It is not clear to us why an adult smelt that is moving upstream against the flow would be more likely to move with net reverse flow into the south Delta. Nor are we aware of any evidence that saltwater fish species are more aggressive than freshwater communities. Both statements are speculative, at best, and detract from the more supportable outflow relationship. (DWR)

Reply: The fourth sentence has been deleted. A second sentence has been added, and the third sentence modified to read, "In low outflow conditions, adults must migrate farther upstream to find suitable freshwater spawning habitat. Reverse flows, which draw freshwater from the Sacramento River, may entrain adults into the south Delta where adults and their larvae are more vulnerable to entrainment in diversions and other causes of mortality (USBR 1997a)."

Comment: [page 030] Spawning of splittail typically begins at 2 years of age. (DWR)

Reply: Revision made to text. Some splittail may begin spawning at 1 year.

Comment: [page 031] The DEIR should analyze the water elevation height and its effects on wetted channel periphery so that a comparison can be made of Sacramento splittail spawning habitat availability among the alternatives. (USDOI)

Reply: The USFWS suggested that a wetted channel periphery technique could be used if assumptions of important breeding areas and flood stages could be developed. There are several major assumptions that would have to be made to complete this type of analysis, limiting the benefits of the analysis. In general, the flow alternatives have very little effect on the degree of flooding that would occur in the lower tributaries and Delta, and therefore would have little influence on the amount of spawning habitat available to splittail. Only flood flows will influence the amount of available spawning habitat and these will occur regardless of the flow alternative selected.

Comment: [page 031] Alternative 6 seems to be the best one for striped bass, although there is no explanation why. In some cases it is unclear why the model performs as it does under the various alternatives (USDOI)

Reply: The striped bass analysis has been revised in the FEIR. See revised text.

Comment: [page 031] The DEIR cites a 1990 estimate of the striped bass population. We recommend the FEIR use the estimate for 1994. The striped bass population numbers for 1994 are 1,192,247 for adult bass (3+ years old) and 712,111 for legal sized bass. (DWR)

Reply: Revision made to text reflecting recent population estimates in 1994 and 1996.

Comment: [page 032] The text states that Neomysis mercedis is the primary food source of striped bass during their first year of life. Yearling striped bass actively forage on a variety of organisms, in addition to mysid shrimp. (SWC)

Reply: USBR 1997 cites Stevens 1966 as indicating Neomysis and amphipods are primary prey items until their second year. The sentence has been revised.

Comment: [page 032] The discussion of explanations for reduced American shad abundance at lower Delta outflows presented on this page and attributable to USBR (1997a), as discussed earlier, represent hypotheses and speculation rather than scientifically supported factual explanations. (SWC)

Reply: The explanations are hypotheses. The text has been revised to acknowledge this.

Comment: [page 034] Figure VI-26 shows that all of the flow alternatives have a higher starry flounder abundance index than the base case. What is the significance of an increase in the abundance index? The EIR only shows an increase or decrease without explaining its significance. Why is an index of 381.7 better than an index of 380.6? Why isn't the index for Alternative 2 the same as

Alternatives 3 and 4 since they all require the same flows and exports? It is interesting that an alternative that proposes less flow on the San Joaquin River (Alternative 7) results in a higher index as the higher flows proposed in Alternatives 2, 3, and 4. See Comment 72. (SJRG)

Reply: The significance of the abundance indices are discussed in response to comment for Chapter IV, Section E.2, Page 12. The abundance index for starry flounder for Alternative 2 is less than that for alternatives 3 and 4 because the outflow for Alternative 2 is slightly less in the March to June period. Alternative 7 outflow was also slightly higher during this period which translated into a slightly higher abundance index.

Comment: [page 034] It is doubtful that starry flounder are limited by competition from English sole. (SFPUC)

Reply: The sentence has been revised to remove reference to English sole. Competition is stated as just one factor that may contribute to the decline.

Comment: [page 035] Delete the sentence that begins. "First, higher river..." This is probably a reference to the two-layer flow in the Suisun Bay entrapment zone that is now known not to exist. (DWR)

Reply: Revision made to text.

Comment: [page 035] Change text to read …"C. franciscorum spawn in the winter and early spring and densities are correlated with outflow during this time (DFG 1993). In low flow years, the distribution of C. franciscorum is further upstream and exposes them to entrainment at the PG&E power plant. Large numbers of C. franciscorum are entrained by the PG&E plant in a wet year, and the numbers may be higher in dry years (IEP 1996). C. franciscorum populations may be adversely affected by the reduced availability of phytoplankton food since 1986, when the exotic clam, Potamocorbula amurensis, became established in the estuary and reduced chlorophyll a levels by a factor of 10 in Suisun Bay." (DWR)

Reply: Revision made to text.

Comment: [page 035] Change the paragraph to read ..."The amount of shallow, brackish water habitat seems to be a key population factor for this species. Shallow water provides physical refuge for juvenile C. franciscorum from predators and adult shrimp; Crangon are cannibalistic." (DWR)

Reply: Revision made to text.

Comment: [page 035] Figure VI-27 shows that all of the flow alternatives have a higher immature C. franciscorum abundance index than the base case. What is the significance of an increase in the abundance index? The EIR only shows an increase or decrease without explaining its significance. Why is an index of 158 better than an index of 154? It is interesting that an alternative that proposes less flow on the San Joaquin River (Alternative 7) results in the same index as the higher flows proposed in Alternatives 2, 3, 4, and 6. (SJRG)

Reply: The significance of the abundance indices are discussed in response to comment for Chapter IV, Section E.2, Page 12. Alternative 7 outflow was slightly higher in the March to May period, resulting in a slightly higher abundance index for C. franciscorum.

Comment: [page 035] Use the word "juvenile" rather than "immature" when referring to C. franciscorum. (DWR)

Reply: Revision made to text.

Comment: [page 035] Change the sentence "Alternative 5 has a slightly higher index than the other alternatives due to higher outflow." to read "...other alternatives and may be due to higher outflow." (DWR)

Reply: Revision made to text.

Comment: [page 035] The text makes it sound as if Potamocorbula eat Neomysis. Modify the text to read: "C. franciscorum populations may be adversely affected by lower phytoplankton food availability since the 1986 invasion of P. amurensis, which reduced chlorophyll levels by a factor of 10." (DWR)

Reply: Revision made to text.

Comment: [page 035] Add another factor that reduces abundance of N. mercedis in upstream areas: "(3) higher concentrations of contaminants in upstream areas that cause direct losses through acute effects and indirect losses through effects to food organisms". (USDOI)

Reply: The sentence is not intended to specifically discuss abundance in upstream areas. There are factors other than contaminant concentrations that may affect abundance, such as increased predation and competition, or reduced habitat.

Comment: [page 035] The EIR should mention that the Potamocorbula invasion has increased competition for Neomysis, thus limiting the food supply for splittail, striped bass and other species that feed on Neomysis. (DWR)

Reply: Comment noted. Food limitations are already mentioned for striped bass.

Comment: [page 035] No mention is made of the recent invasion of Acanthomysis which appears to be replacing Neomysis in places and at times. This invasion should be factored into flow abundance relationships. (SFPUC)

Reply: Revision made to text, noting the recent invasion of Acanthomysis. The flow/abundance relationship for Neomysis has been deleted, since the relationship does not accurately predict abundance in recent years.

Comment: [page 035] Remove statements about entrapment zone regarding Neomysis mercedis. (DWR)

Reply: Revision made to text. The sentence has been revised to remove the reference to the entrapment zone.

Comment: [page 035] 5th paragraph. Change the paragraph entirely to read..."Neomysis. Neomysis mercedis, a native mysid shrimp, is an important food source for many estuarine fish and feeds upon phytoplankton, rotifers and copepods (SWRCB 1995). The life span, survival, size and abundance of N. mercedis is regulated by outflow, water temperature and food availability. The SWP and CVP pumps may export large numbers of N. mercedis in low outflow years when N. mercedis are farther upstream. Water temperature affects the rate of development and size at maturity. Food supply is probably the most important limiting factor for N. mercedis, which have decreased with the decline of phytoplankton chlorophyll a concentrations since the 1970s (Orsi and Mecum 1996)." (DWR)

Reply: Comment noted. The FEIR has been revised to incorporate this information.

Comment: [page 036] 2nd paragraph. Modify "abundance" to "phytoplankton chlorophyll" and in other parts of the text. (DWR)

Reply: Comment noted. Abundance is not always equal to chlorophyll a, however, chlorophyll a is used as a measure of phytoplankton abundance.

Comment: [page 036] 2nd paragraph. Replace the last 1/3 of the paragraph with... "Increased flow and reduced diversions are believed to increase phytoplankton biomass, increase potential habitat and push P. amurensis populations downstream where they compete less with N. mercedis for phytoplankton food." (DWR)

Reply: Revised as noted with minor wording differences.

Comment: [page 036] Figure VI-28 shows that all of the flow alternatives have a higher Neomysis abundance index than the base case. What is the significance of an increase in the abundance index? The EIR only shows an increase or decrease without explaining its significance. Why is an index of 47.70 better than an index of 47.57? Why isn't the index for Alternative 2 the same as Alternatives 3 and 4 since they all require the same flows and exports? It is interesting that an alternative that proposes less flow on the San Joaquin River (Alternative 7) results in the same index as the higher flows proposed in Alternatives 2, 3, and 4. (SJRG)

Reply: See comment for Chapter IV, Section E.2, Page 12 for reply. Predictions of Neomysis abundance based on the outflow/abundance relationship have been deleted, since the relationship is poor at predicting abundance in recent years.

Comment: [page 036] 4th paragraph. Entrainment by diversions and residence time are probably important factors affecting copepod abundance in the Delta (IEP 1996). (DWR)

Reply: Revision made to text.

Comment: [page 036] Copepods cannot be treated as a single organism. The EIR should recognize the interaction between copepod species. (SFPUC)

Reply: Revision made to text.

Comment: [page 036] Modify end of first sentence to read: "lowered phytoplankton chlorophyll concentrations" (DWR)

Reply: Comment noted. Text revised to state "phytoplankton (chlorophyll a) concentrations." Chlorophyll concentrations are used as a measure of phytoplankton abundance.

Comment: [page 036] Change the entire paragraph..."Phytoplankton. Phytoplankton are very small, usually microscopic, algae that are suspended in the water column and drift with the currents. The major phytoplankton groups in the Bay/Delta Estuary are diatoms. Phytoplankton convert solar energy into food through photosynthesis and comprise an essential part of the food web in the Estuary. Phytoplankton productivity, biomass, density and species composition are influenced by several factors, including light, temperature, nutrients, residence time, inflow and grazing by aquatic organisms (SWRCB 1995)." (DWR)

Reply: Revision made to text. The sentence, "the major groups in the Bay/Delta estuary are diatoms, dinoflagellates and cryptomonade" was left as is because the San Francisco Estuary Project report on the 1992-97 State of the Estuary indicated changing species composition that included other species in addition to diatoms, even though they make up approximately 75% or more of the phytoplankton species. Species composition is strongly associated with water year type.

Comment: [page 036] Phytoplankton: This section would benefit from reading Alan Jassby's work. Phytoplankton dynamics are more complicated than indicated. The invasion of the Asiatic clam also needs to be mentioned. (SFPUC)

Reply: Comment noted. This section is intended to be a general discussion of phytoplankton life history and factors affecting abundance. Reference to the invasion of the Asiatic clam has been added.

Comment: [page 036] 6th paragraph. Change the entire paragraph...."Light limitation through turbidity and depth affects phytoplankton growth rates in the Estuary (USBR 1997a). In general, phytoplankton are light limited due to the high turbidity in the estuary. Net production is consistently negative in the channels of the Delta, where most of the phytoplankton occur in light-limited conditions below the surface. Only in the shoal areas, like those in Suisun Bay, where the phytoplankton cells are frequently mixed into the surface waters, can net production be positive; phytoplankton growth rate is about ten times higher in the shoals than the channels of Suisun Bay (SWRCB 1995)." (DWR)

Reply: Revision made to text.

Comment: [page 037] The EIR should state that diversions and Delta outflow account for 86% of chlorophyll a concentrations in Suisun Bay, not in the entrapment zone, as the text indicates. (DWR)

Reply: Comment noted. IEP 1996, page 6, states: Jassby and Powell (1994) found that diversions and Delta outflow together account for 86% of the variability in chlorophyll a concentrations in the entrapment zone.

Comment: [page 037] The discussion of phytoplankton should not reference the entrapment zone. Phytoplankton was high in shoals of Suisun Bay until introduction of the clam in 1986 that decreased chlorophyll a concentrations by a factor of ten in Suisun Bay (SWRCB 1995). Habitat for phytoplankton in the Delta is also influenced by residence time, which varies with flow conditions (SWRCB 1995). (DWR)

Reply: Revision made to text. The reference to the entrapment zone has been revised and additional reference to the decreased chlorophyll a concentrations attributed to Potamacobula amurensis introduction in 1986 has been included. (SFEP- State of the Estuary 1992)

Comment: [page 037] Change the entire paragraph...."Lehman 1996 demonstrated chlorophyll a concentrations were highest for the Delta during intermediate (normal) water-year types. Higher chlorophyll a concentrations occur in Suisun Bay during wetter years, but extremely high outflows decrease phytoplankton biomass by flushing phytoplankton out of the estuary." (DWR)

Reply: Comment noted. The flow alternatives under consideration will not result in a change in the frequency of extremely high flow events that would flush phytoplankton out of the estuary. In the range of flows being considered in the alternatives, higher Delta outflow and lower exports, in general, would be expected to be beneficial to phytoplankton production.

Comment: [page 021] Regarding Flow Alternative 6, the DEIR should compare the export pumping rate for this alternative to the pumping rates of the other alternatives and should evaluate the impact of the alternative on the composition of the San Joaquin River and the resulting impacts on anadromous fish. (USDOI)

Reply: Due to modeling restrictions, the instantaneous pumping rates of the export pumps that result from implementation of the alternatives cannot be determined. Table VI-9 compares the average volume of water exported each month for the period of record and for the critical period. The average annual export under Alternative 6 is lower than the average annual export under the base case. The monthly average export increases from the base case in September, October, May, June, and July. During the critical period, exports increase in October, January, April and June. Recirculation under Alternative 6 will increase the percentage of Sacramento River water that returns to the San Joaquin River. This may impact the attraction of anadromous fish in October and may affect the imprinting of juvenile anadromous fish in April and May. Increased exports could also result in higher water temperatures in the San Joaquin River. This is discussed in section B.3 of Chapter VI.

Section B.3.c. Summary of Effects on Fish and Aquatic Resources

Comment: [page 037] The discussions of fish and aquatic resources conclude that Flow Alternatives 2 through 7 would improve these environmental resources. The DEIR conclusions are

incorrect because significant increases in export pumping would occur under Flow Alternatives 3, 4, and 5. (YCWA-1A)

Reply: Compared to D-1485 conditions, net exports decrease for Alternatives 2 through 8. The impacts of Alternatives 2 through 8 on fish and other aquatic resources are adequately described in Chapter VI.

Section B.4. Vegetation and Wildlife

Comment: [page 038] We believe the correct reference in the second paragraph for Storage Data is Section C.4 of this chapter. (DFG)

Reply: The reference is to river stages, not storage. The reference is in Section C.3.

Comment: [page 038] 3rd complete paragraph. It should be noted that the position of X2 is one measure of salinity which is determined by Delta outflow. However, agricultural drainage from the San Joaquin River and tributaries contributes to salinity-related issues. Thus, changes to flows on the San Joaquin River and its tributaries may have localized effects on vegetation and associated wildlife. Furthermore, if contaminants such as selenium are included in the analysis of changes to flows on the San Joaquin River and its tributaries, then again vegetation and wildlife may be affected by different flow alternatives. Additionally, the magnitude of flows may affect erosion which will affect in-channel islands and channel peripheries in general. (USDOI)

Reply: Comment noted. Under the flow alternatives, San Joaquin River flows at Vernalis are higher than the base case between April and August and lower November to March. Salinity modeling in the southern Delta predicts variable conditions. As most Delta wetland species display a wide range of salinity tolerance and there is no clear trend towards a long term increase in salinity, no significant impact to Delta vegetation or wildlife is expected from implementation of the Plan.

With respect to erosion of in-channel islands, the flow alternatives have no effect on peak flows. Therefore, there will be no erosion related impacts resulting from implementation of the 1995 Bay/Delta Plan.

Section B.5. Land Use

Comment: [page 039] One of the issues of concern to ISD is the impact of the implementation of the Plan on Reclamation District 830's appropriative water right, which in turn impacts ISD's agricultural use of Jersey Island. The DEIR at page VI-39 notes under the discussion of "Land Use" that if diverters under an appropriative water right are curtailed, "they probably would continue to divert under riparian right if natural flow is available at the time, or seek contracts for project water. In either case, there would be no effect on water availability and land use practices resulting from implementation of the outflow alternatives." Could you please address the situation if natural flow were not available at the time, or if contracts for project water were not available. (ISD)

Reply: RD 830 is in cutoff group 5. Figure V-26 in the DEIR shows the frequency of diversion curtailments for cutoff group 5. The analysis of water supply impacts shows that in July, for example, RD 830 would have its appropriative rights (A3768) curtailed in excess of 80 percent of the years. If RD 830 or ISD has a valid riparian right, the water supply analysis shows that there would

be natural flows available for riparian diversions. The analysis also shows that the projects would have sufficient water available to provide adequate supplies to existing contractors whose diversions have been curtailed. If the water users do not have valid riparian rights, contracts for project water are not available, and groundwater is unsuitable, then the water users would likely have to shift to crops which do not need irrigation from June through August or fallow those lands that do not have an adequate supply of water.

Comment: [page 039] It has not been established that all the appropriative water right holders located in the Delta have riparian rights unless SWRCB is accepting assumed riparian status for all diverters within the Delta. This assumption should be stated if that is the case. This assumption is particularly significant during critical periods when there may be no natural flow. (DWR)

Reply: Revision made to text to reflect the comment.

Section C. ENVIRONMENTAL EFFECTS IN UPSTREAM AREAS

Comment: The DEIR makes conflicting assumptions in its analysis of the Environmental Effects in Upstream Areas imposed by the various Flow Alternatives. In assessing environmental impacts on vegetation and wildlife, the modeling studies "assume no agricultural farmland is fallowed to obtain water to meet the flow objectives and that cropping patterns in the Central Valley remain unchanged. Hence, impacts to agricultural and terrestrial habitats are not considered..." (DEIR VI-61). In assessing land use in the same section of the DEIR it states that "agricultural producers will respond to decreased surface water supplies by 1) obtaining alternate sources of supply...2) increased water use efficiency... and 3) matching land use and cropping patterns to available water supplies through a combination of fallowing and shifts in crop type..." (DEIR VI-70).

The DEIR states that "implementation of the 1995 Bay/Delta Plan outflow objectives will result in either no change in upstream water deliveries or reduced water deliveries to upstream areas in Alternatives 3, 4, 5 and 7 when compared to the base case." (DEIR VI-70).

Impacts to upstream vegetation and wildlife must be considered assuming reduced deliveries and subsequent alterations in land use. Instead , the DEIR dismisses land use implications by stating that "due to the wide range of factors governing a water user's response to reduced supply, it is difficult to predict how such reductions would translate into changed land use patterns." (DEIR VI-71) (SVRC, TCWA)

Reply: Widespread fallowing is not expected to result from implementation of the 1995 Bay/Delta Plan. The "Land Use" section acknowledges that some fallowing could occur. A more likely response to water supply shortage, however, is either a shift in crop type or establishment of an alternate groundwater or contractual supply. A contracted supply need not be physically available to a water right holder. Releases from Project reservoirs for Delta purposes can be made in lieu of local curtailment. See also the general comment on contracting issues in Chapter II.

Comment: [page 037R] The DEIR defines the environmental setting for implementation of the Bay/Delta outflow objectives to include the upper Pit River and its tributaries. (See DEIR, p. III-1 and fig. III-1.) However, the DEIR's environmental impact analysis fails to consider all of the significant impacts of Flow Alternatives 3 and 4 in this area and other areas like it. (SFID)

Reply: There are nine water rights on DEIR Table II-5 which are in the Pit River watershed, two of which belong to the South Fork Irrigation District. All are storage rights with no direct diversion. The latest date permitted for storage is May 15. Generally, Alternatives 3 and 4 curtail water rights between June and August, and do not require releases of previously stored water for Delta purposes. Therefore, these alternatives are unlikely to have any substantial impacts in the Pit River basin.

Comment: [page 037R] Significant changes to the quantitative analyses upon which the qualitative impacts are based should result in a modification of those qualitative analyses. Yet the qualitative analyses related to the economic, sociological, environmental and human impacts resulting from delivery reductions, as outlined in the DEIR, remain unchanged. The assessments of economic and environmental impacts of increased reliance on overburdened, severely limited groundwater supplies in the CVC service area are overly broad and inadequately addressed. Other significant qualitative impacts inadequately addressed relate to the socioeconomic and environmental effects of short-term fallowing and long-term retirement of highly productive agricultural lands in the CVC service area. (CVCC-2)

Reply: The base condition for the Cross Valley Contractors is very limited deliveries from the Delta without use of the SWP point of diversion. The addition of substantial surface water deliveries to the Cross Valley Canal service area under the Joint Point of Diversion alternatives is not expected to result in groundwater overdraft, long-term land retirement, or adverse socioeconomic effects.

For the most part, the quantitative analysis contained in the DEIR did not change in the revised chapters. These chapters were revised to correct a modeling error in Flow Alternative 5, and to add a new flow alternative and a new joint point of diversion alternative to evaluate implementation of the San Joaquin River Agreement.

The economic impacts of replacing surface water with groundwater in other parts of the San Joaquin Valley are quantitatively modeled and reported in Chapter XI. The environmental impacts associated with increased overdraft in all of the sub-basins of the San Joaquin Valley are discussed in appropriate detail in Chapter VI. The FEIR states that land retirement could occur as a result of implementing the 1995 Bay/Delta Plan. However, because of the investment in agricultural infrastructure, and the excellent soil and climate in the study area, large scale land retirement is not expected.

Comment: [page 037R] A major omission in the DEIR analysis is its failure to analyze the impact of proposed reallocation schemes on salt discharges to the San Joaquin River. Clearly, importation and use of less irrigation water on the west side of the San Joaquin Valley will have an impact on salt loads delivered to the river. (EDF)

Reply: Implementation of the Bay/Delta Plan will result in a decrease in the importation and use of irrigation water on the west side of the San Joaquin River. The small magnitude of this decrease in comparison to existing levels of delivery, however, is not expected to result in a significant decrease in salt loads delivered to the river. In addition, the large salt load presently stored in the shallow groundwater will preclude any substantial declines in salt load discharges in the near future.

Comment: [page 037R] A number of the National Wildlife Refuges (NWR) authorized to receive water through the CVPIA also have state-based appropriative water rights which were identified in Table II-5 of the DEIR. However, it is not clear in the DEIR what the potential impacts will be on the

following refuges, which are not authorized to receive water pursuant to the CVPIA: Butte Sink NWR, Modoc NWR, Sacramento River NWR, San Joaquin River NWR, Stone Lakes NWR, Arena Plains Unit of the Grassland Wildlife Management Area. The USFWS recommends that, if the SWRCB intends to apportion responsibility for the Delta to the refuges' water rights, any future DEIR revisions include an evaluation of the potential impacts on the above refuges because their lack of access to water may have a disproportionately large effect on the refuges' wetlands and the ability of managers to maintain adequate habitat to meet resource requirements in the refuges, including listed species habitat. (USDOI)

Reply: Of the wildlife refuges listed in the comment which are not part of the CVPIA, Modoc NWR and Butte Sink NWR have rights listed on Table II-5. The impact on Modoc NWR rights (A000760 and A001042) would be negligible, as the rights are in priority group 8 and are for storage only. The storage season ends May 15; supplemental water is generally not required under Alternatives 3 and 4 until June. Priority group 8 is never called upon for water in May.

The Butte Sink NWR rights (A012437 and A014316) have a cumulative direct diversion rate of 7 cfs and a diversion season of May 1 to September 1. These rights would presumably be used by refuge managers to either grow crops to help feed wintering waterfowl or to maintain non-seasonal wetland habitat. There could be an impact to wildlife if the rights were not exercised. Our general assumption with regard to water right holders in the Sacramento Valley is that when rights are curtailed, diversion will continue and the Delta obligation will be met through a contractual arrangement with either the CVP or the SWP. This assumption applies to Butte Sink NWR as well. See the response to general comment on contracting issues, Chapter 2, Section E.1.c for a detailed discussion of this issue.

Comment: [page 040] The issue of the effect of increased exports on watershed ecological and economic interests is much broader than the treatment given to them in Chapt. VI-C.1.-10. (RCRC)

Reply: Economic impacts of implementing the 1995 Bay/Delta Plan are discussed in Chapter XI, not in Chapter VI. Further, none of the flow alternatives analyzed in the DEIR increase exports over the base case.

Comment: [page 040] The DEIR does not disclose or discuss any effects the various flow alternatives might have on Trinity Lake, the Trinity River, or the economy of the Trinity River Basin. As Trinity Lake is the second largest CVP reservoir, an integrated component of the CVP, a supplier of water to the Delta, and thus a facility which could experience a change in operations attributable to implementation of the 1995 Bay/Delta Plan, disclosure and discussion of possible Trinity impacts is required and hereby requested. (Trinity Co.)

Reply: The USBR's diversion from the Trinity River and releases from Trinity Lake should not increase as a result of implementing any of the alternatives. Therefore, there are no impacts to Trinity Lake, Trinity County, or the Trinity River due to the implementation of the Plan. This conclusion is corroborated by the DWRSIM modeling results which show no monthly storage differences among the base case and alternatives for Trinity Lake due to implementing the flow objectives. Carryover storage values for Trinity Lake have been added to Table V-3 and V-4 to clarify this point.

The modeling assumptions for all of the flow alternatives included the current flow agreement. If Trinity River instream flows are increased, then, less water would be available for export into the Sacramento Basin.

Comment: [page 040] The coldwater pool availability in Folsom Reservoir is associated with inflow to the reservoir, as well as differences in the modeled outflows (timing and magnitude) released from Folsom Dam. There is no indication in this DEIR that there was any consideration whatsoever of development of an optimal instream flow regime, based on water availability which varies by hydrologic condition or water year type. Not only did the DEIR neglect to incorporate optimal coldwater pool management, it did not even address water temperature. No water temperature impact assessment was conducted. The DEIR stated that water temperature models were not available for all watersheds, therefore, no water temperature impact assessment was done. (PCWA-1)

Reply: See response to the general comment on temperature modeling, Chapter VI, Section C. Results of temperature modeling are included in the FEIR for the lower American River.

Operating criteria for Folsom Reservoir are specified by DWRSIM. The EIR does not consider optimal flow regimes for the lower American River, because the proposed project is not intended to establish specific instream flow requirements upstream of the Delta. If the flow regimes modeled for each tributary are different from optimal regimes, adjusted releases can be made from other tributaries to meet the Delta objectives.

Section C.1. Hydrology

Comment: [page 037R] Alternatives 3 and 4 rely on water right priority and may be a logical way to meet the 1995 Bay/Delta Plan objectives in the Delta from a water right law standpoint. However, from an aquatic resources perspective, a strict water rights priority approach to obtaining contributions to meet Delta objectives produces a somewhat haphazard result, particularly with respect to resulting flows in the anadromous fish streams below the lowest dams. (DFG)

Reply: Comment noted.

Comment: [page 040] Why are the Feather River flows at Gridley highest in Alternative 2 in June, in Alternative 7 in July, in Alternative 3 in August, and in Alternative 5 in September? (Butte Co., SJRG)

Reply: Alternative 2 has the highest flows during June because under this alternative, the Projects are required to meet the flow objectives, which results in greater releases from Oroville. For July and August, the average flows under most of the alternatives are very similar and the differences are caused by modeling variability. For September, Alternative 1 possesses the highest flows; Alternative 5 offers the next highest flows because Alternative 5 is designed to mimic the natural hydrology of the basin. Relative to other Sacramento River tributaries, the outflow obligation for the Feather River basin increases for September because a greater percentage of unimpaired outflow would have come from the Feather River. Since the outflow obligation for meeting the objectives increases under Alternative 5, this alternative provides higher flows than the other six alternatives.

Further, June exports are restricted by the E/I ratio. In July, the E/I ratio increases to 65% and Lake Oroville is operated in most years to meet demand at the Banks Pumping Plant. This results in higher flows on the Feather River.

Comment: [page 040] Hydrology. The DEIR, in discussing "upstream area" hydrology, indicates that Alternatives 3 and 4 will present "no significant impacts", despite the conclusion that these Alternatives will result in the least flows in summer months. (Shasta CWA)

Reply: This section was rewritten in the May, 1998, revision of Chapter VI. The text to which the comment refers was deleted. However, the small changes in flow expected on the Sacramento River will not have a significant environmental impact.

Comment: [page 040] The hydrology analysis set forth on pages VI-40 and following describes predicted changes in upstream river flows, but fails to provide any discussion of whether or how these predicted changes are significant. (Sac)

Reply: In subsequent sections of Chapter VI of the FEIR, the effects of changes in river flow on water temperature, aquatic habitat, vegetation and wildlife, channel erosion, energy, recreation, cultural resources, and groundwater resources are analyzed.

Comment: [page 040] Flow Alternatives 2 through 7 require an increased release of flows during spring (e.g., up to a 26% increase in average flows on the lower American River) to meet Bay/Delta objectives. This approach neglects the efforts of the Sacramento Area Water Forum which identified, at least in the American River, a more beneficial way [from a fisheries perspective] of releasing the water in the fall with some optimal coldwater pool management to try to manage the steelhead resource in the summer and maximize the benefit to the salmon run in the fall. Overlooking regional planning efforts such as the Water Forum could result in less beneficial conditions for fish resources in the upstream watersheds, as well as potentially significant adverse impacts, relative to the Base Condition. (PCWA-1A)

Reply: For modeling purposes, flow releases on the lower American River under Alternatives 2 through 7 were increased during the spring months and reduced during the fall, in order to provide a portion of the flows needed to meet the spring X2 objectives in the Delta. The modeling assumptions were made without regard to optimizing aquatic habitat in individual tributaries. If a different operating scenario would provide better instream benefits in the lower American River than the one used for modeling purposes, releases from other project controlled tributaries could be adjusted to meet the spring outflow objectives in the Delta.

Comment: [page 040] Alternatives that increase the flow in the San Joaquin River are apt to assist dischargers in meeting selenium objectives. In particular, implementation of Alternative 5 or 6 could provide for easier compliance with the selenium objective in our Basin Plan during periods of established minimum flow requirements at Vernalis. Although increased flow in most months will provide easier compliance with the selenium objective, this will be partially offset by reduced flows in other months (e.g, Tables VI-21, VI-27). The actions taken to meet flow and salinity load targets for the Delta may make compliance with our selenium objective a more difficult task. (CVRWQCB)

Reply: Comment noted.

Comment: [page 042] The Hodge physical solution (flow regimen) for the lower American River amounts to about 1.7 MAF out about 2.7 MAF, or about 63 percent of the average annual runoff. This 1.7 MAF would be the American River Basin's contribution to provide the "good conditions"

(per Fish and Game Code Section 5937) to restore and protect the public trust interests of the Lower American River and be equal to the "fair ecological share" contribution to protect water quality objectives of the Delta pool. Instream flows, downstream of Nimbus Dam during an average runoff year, would be about 2000 cfs during the spawning and incubation period and 3000 to 3500 cfs during the spring out-migration. Dry years would be somewhat less than these flows depending on the water year and carryover storage. In wet years the flows would be greater. (Smith)

Reply: The adequacy of the required minimum instream flow releases in meeting the needs of fishery resources in streams tributary to the Delta is not a subject of the EIR. The 1995 Bay/Delta Plan identifies specific objectives to protect beneficial uses in the Delta, including fish and wildlife. The proposed project analyzed in the EIR is an administrative action to implement the Plan by allocating responsibility for achieving Plan objectives to water right holders whose diversions affect the beneficial uses of the Bay/Delta.

Assumptions used in hydrologic modeling of the base case and project alternatives are described in Chapter IV. Flow requirements below Nimbus Dam on the American River during October through February are triggered by Folsom carry-over storage. Flow requirements during March through September are triggered by the previous month's storage plus remaining water year inflows. Minimum flows are maintained per USBR operation criteria outlined in an April 26, 1996 letter from USBR to the SWRCB (USBR 1996).

Comment: [page 043] If Friant is not contributing water to the San Joaquin River under Alternatives 3 and 4, why does San Joaquin River flow at Newman increase as compared to the base case? (SJRG)

Reply: River flow at Newman increases under Alternatives 3 and 4 for several reasons. First, Merced Irrigation District must bypass water which would otherwise be stored in Lake McClure whenever priority group one is curtailed. Second, Stevinson Water District and other direct diverters in the general vicinity of the Merced-San Joaquin river confluence contribute flow when their diversions are curtailed.

Comment: [page 043] Table VI-23. This shows a "savings" of water in New Melones during the winter months under Alternative 6. It is not clear how this savings was achieved. The only winter-time releases we can identify are for instream flows, flood control spills, and possibly (on rare occasions) some water quality releases. None of these releases can be reduced to save water for summer releases so it is unclear how the savings were achieved. (USDOI)

Reply: This comment misinterprets Table VI-23. The table lists 73-year average Stanislaus River flows upstream of the San Joaquin River confluence. While it is true that Stanislaus River winter flows are lower under all alternatives than the base case, higher summer demands for salinity and fish and wildlife protection result in lower overall storage. Winter flows are on average lower under the alternatives as depleted New Melones Reservoir storage fills. See the New Melones carryover storage tables in Chapter V.

Comment: [page 045] We question the validity and accuracy of the models when an alternative that requires more water than the base condition results in less water in the river. The EIR is deficient for failing to fully disclose and evaluate the impacts to the upstream water users. (SJRG)

Reply: Tables VI-25 through VI-28 show average monthly flows in the Tuolumne and Merced rivers. On an annual basis, Flow Alternatives 3, 4, 5, 7 and 8 require more flow on these rivers than the base case. This does not, however, require that flows be higher than the base case in every month. New Don Pedro and New Exchequer dams are operated dynamically in DWRSIM. Therefore, if higher releases are required in one month, the model will try to make up lost storage in other months while still meeting all applicable instream flow requirements. Impacts to water delivery and reservoir carryover storage are presented in Chapter V.

Comment: [page 40R] In the modeling that was done for Alternative 8, it appears that additional flows required to meet the VAMP were treated as additional stream releases in the case of the Merced, Tuolumne, and Stanislaus rivers and additional accretions to the river for the contribution from the San Joaquin River Exchange Contractors. This may represent a "worse case" in that the money received pursuant to the San Joaquin River Agreement will be used by the districts participating in the San Joaquin River Agreement to invest in water saving and water supply augmenting facilities. (SJRG-2)

Reply: The commentor is correct in stating the manner in which VAMP flows were treated in the modeling. If money received pursuant to the San Joaquin River Agreement were used for water conservation facilities, impacts on Don Pedro Reservoir and Lake McClure would be less than disclosed in the DEIR. Quantification of the amount of water which might be conserved and whether it would actually contribute to Vernalis flows is speculative.

Section C.2. Aquatic Resources Habitat

Comment: [page 45] The DEIR does not evaluate the adequacy of minimum flow release requirements in each stream tributary to the Sacramento-San Joaquin Delta. Current instream flow requirements in the tributary streams may be inadequate to meet the needs of aquatic resources. (Smith, EDF)

Reply: The adequacy of the minimum instream flow requirements in each tributary in the Bay/Delta system is not the subject of this proceeding. The proposed project analyzed in the EIR is an administrative action to implement the Water Quality Control Plan. The SWRCB will decide how to implement responsibility for achieving the Plan objectives based on detailed analysis and evidence received at the hearing.

Comment: [page 045] The river and reservoir temperature impacts of the flow alternatives must be addressed. Mitigation measures should be developed if temperature-related impacts are identified. (EDF, DFG, PCWA, SWC, USDOI)

Reply: In the FEIR, the water temperature model developed by the USBR (USBR 1990, 1993, 1997) was used to assess the effects of the Flow and Joint POD Alternatives on water temperature in four major streams in the Sacramento-San Joaquin River system, the Sacramento, Feather, American, and Stanislaus rivers. DWRSIM, described in Chapter IV, Section A, was used to predict monthly project operations that were input to the temperature model for the 72-year hydrologic period of record (1922-93). Temperature modeling techniques are described in Chapter IV. Model results for the flow and Joint POD alternatives are provided in Chapters VI and XIII, respectively. EBMUD submitted evidence regarding temperatures on the Mokelumne River at the SWRCB's water right hearing. See responses to comments on Chapter VI, Section C.2.a regarding the Mokelumne River. The SWRCB

does not have access to the temperature model developed for the Tuolumne River and MID/TID declined the SWRCB's request that the model be run.

The reservoir temperature models simulate monthly mean vertical temperature profiles and release temperatures for Whiskeytown, Shasta, Oroville, Folsom, New Melones and Tulloch Reservoirs based on hydrologic and climatic input data. The temperature control devices (TCD) at Shasta, Oroville, and Folsom Dams can selectively withdraw water from different reservoir levels to provide downstream temperature control. The TCDs are generally operated to conserve cold water for the summer and fall months when stream temperatures become critical for fisheries. The models simulated the TCD operations by making upper level releases in the winter and spring, mid-level releases in the late-spring and summer, and low level releases in the late-summer and fall. Temperature changes in the downstream regulating reservoirs, Keswick, Thermalito, Natomas, and Goodwin, were computed from equilibrium temperature decay equations in the reservoir models, which are similar to the river model equations.

The river temperature models were used to predict mean monthly water temperatures at twelve locations on the Sacramento River from Keswick Dam to Freeport, twelve locations on the Feather River from Oroville Dam to the mouth, nine locations on the American River from Nimbus Dam to the mouth, and eight locations on the Stanislaus River from Goodwin Dam to the mouth. The river temperature calculations were based on regulating reservoir release temperatures, river flows, and climatic data. Monthly mean historical air temperatures for the 72-year period and other long-term average climatic data for Shasta, Whiskeytown, Redding, Red Bluff, Colusa, Oroville, Marysville, Folsom, Sacramento, New Melones, and Stockton were obtained from Weather Bureau records and used to represent climatic conditions for the five river systems.

The following sites were selected for detailed analysis of temperature effects:

Sacramento River - Below Keswick Dam, Ball's Ferry, Jelly's Ferry, and Vina
Feather River - Downstream of the Afterbay, Honcut Creek, and Mouth
American River - Below Nimbus Dam, Watt Avenue, and Mouth
Stanislaus River - Below Goodwin Dam, Orange Blossom Bridge, and Mouth

Representative water years were selected for analysis from the period of record for wet, above normal, below normal, dry, and critical water year types. Representative years selected were years closest to the median monthly temperature values for each water year type over the period of record. For the Sacramento River system, water years 1942, 1928, 1979, 1964, and 1992, respectively, were selected to represent the five water year types. For the Stanislaus River, water years 1980, 1963, 1950, and 1976 were selected to represent wet, above normal, below normal, and critical water year types, respectively.

Assessment of impacts on aquatic resources is limited by the monthly time-step used in the DWRSIM and temperature models. Mean monthly flows and temperatures do not define daily variations that occur in the rivers due to dynamic flow and climatic conditions. These variations may have significant effects on habitat for aquatic resources. However, monthly results are useful for general comparison of the alternatives.

Under certain hydrologic conditions, Flow Alternatives 2-8 are predicted to result in higher water temperatures in the Sacramento, lower American, and lower Feather rivers than in the base case. Under certain hydrologic conditions, Joint POD Alternatives 3-8 are also predicted to result in higher water temperatures in the Sacramento, lower American, and lower Feather rivers than in the base

cases (Joint POD Alternatives 1 and 2). However, these water temperature increases are unlikely to result in significant impacts to fishery resources compared to the base case condition.

Comment: [page 045] Flow Alternatives 3, 4 and 5 would have adverse impacts on fisheries in the lower Mokelumne River and Pardee and Camanche reservoirs. In addition, these flow alternatives would result in adverse impacts to carryover storage in Pardee and Camanche reservoirs, water supply impacts to customers in the EBMUD service area, and impacts to recreation. These impacts are not adequately addressed in the DEIR. (EBMUD)

Reply: Lower Mokelumne River Fishery Impacts:

To evaluate potential impacts of the SWRCB's flow alternatives on fishery resources in the lower Mokelumne River, EBMUD conducted modeling simulations of physical habitat and water temperature conditions in the lower river under five scenarios: (1) The 1961 agreement between DFG and EBMUD, (2) The Joint Settlement Agreement (JSA), (3) Flow Alternative 3, (4) Flow Alternative 4, and (5) Flow Alternative 5 (EBMUD Exhibit No. 6). Based on these studies, EBMUD testified at the SWRCB's water right hearing that there are no significant adverse impacts to physical habitat for chinook salmon or steelhead in relation to flow resulting from the SWRCB's flow alternatives or the JSA compared to conditions that would be expected under the 1961 agreement (page 2455 of the SWRCB hearing transcripts). However, EBMUD identified temperature related impacts of the SWRCB's Flow Alternatives 3, 4, and 5 compared to the 1961 and JSA agreements.

Many of the conclusions made by EBMUD result from operational changes assumed in the EBMUDSIM modeling. Because river temperatures are, in part, a result of operational decisions made by EBMUD, different operating criteria can affect the magnitude of these impacts. EBMUD's operating flexibility may increase when use of the Folsom South Canal becomes available.

In addition, fall-run chinook salmon spawning and egg incubation occurs from October through April. Steelhead spawning occurs during the winter and juveniles emerge from the gravel during the spring (February through May). Rearing of fall-run chinook salmon and steelhead may occur in the lower Mokelumne for up to a year before emigration. EBMUD identified the potential for elevated temperatures to be greatest from May through October. The majority of juvenile fall-run chinook salmon have emigrated from the area before temperatures reach stressful levels. Impacts may occur to juvenile steelhead rearing in the river over the summer. However, this exhibit also recognizes that rearing steelhead have higher thermal tolerances than juvenile chinook salmon.

The water temperature impact analysis is not broken down by month to allow evaluation of the true impacts but is based on the May to October period. By omitting the monthly data, the review cannot determine if the temperature exceedance occurs in the spring, summer or fall which reduces the value of the analysis.

Even with the assumptions made by EBMUD, water temperatures resulting in unacceptable conditions for chinook salmon and steelhead are predicted to occur in only 5% of the years under Flow Alternative 3, 7% of the years under Flow Alternative 4, and 20% of the years under Alternative 5, compared to 3% of the years under the Joint Settlement Agreement.

Reservoir Fishery Impacts:

Some impacts to fisheries in Pardee and Camanche reservoirs may occur with prolonged reservoir drawdowns. However, the SWRCB cannot determine the time of year drawdown would occur from

EBMUD exhibits, and drawdowns are not expected to occur in the spring when most warmwater species spawn in the reservoirs. When drawdowns occur in the spring, changes in the surface elevation would have to exceed ten feet per week to impact warmwater fish spawning. Impacts to coldwater fish due to depletion of the hypolimnion may occur slightly more often under Alternatives 3 and 4 than in the base case. However, these type of storage changes are considered by many to be a normal part of the reservoir operations. Impacts to reservoir fisheries are described in the FEIR as generally temporary and mitigable. Proposed mitigation measures include additional fish planting, habitat improvement through planting of shoreline vegetation, addition of habitat structures, and improved management of shoreline grazing practices.

Carryover Storage Impacts:

Impacts of the flow alternatives on carryover storage in Pardee and Camanche reservoirs are adequately described in Chapter V. In Pardee Reservoir, Alternatives 3 and 4 result in slightly higher predicted carryover storage than Alternative 1. In Camanche Reservoir, Alternatives 3 and 4 result in slightly lower predicted carryover storage. In both reservoirs, Alternative 5 results in lower carryover storage.

Water Delivery Impacts:

Water supply impacts to EBMUD are adequately described in Chapter V. Under Alternatives 3 and 4, slight reductions in water deliveries are predicted for EBMUD compared to the base case. Reductions in water deliveries are higher under Alternative 5 than under Alternatives 3 and 4. These reductions are predicted to increase in critical water years. However, these reductions are a small proportion of the total water delivery changes under these alternatives.

Recreation Impacts:

Recreation impacts to Pardee and Camanche reservoirs are adequately described and appropriate mitigation is proposed in Chapter VI. Significant negative impacts to recreation are predicted to occur to peak and off-season use of Pardee and Camanche reservoirs under Alternative 5. Alternatives 3, 4, and 5 are predicted to result in recreation impacts in critical years. Mitigation proposed for recreation impacts includes modification or relocation of facilities such as boat ramps and marinas to accommodate lower water levels.

Recreation on the lower Mokelumne River is predicted to benefit under Alternatives 3, 4, and 5 compared to base case conditions.

Section C.2.a Rivers

Comment: [page 043R] Flow Alternative 7 specifies the allocation amounts and priorities among some San Joaquin Basin water right holders to meet Vernalis flow objectives. While we recognize the value of improved planning capabilities, it is not clear that the prioritization of sources in Table II-10 has considered the needs of anadromous fish within the tributaries of origin. The magnitude, timing, and source of water to meet Vernalis flows from one year to the next can influence the relative value of water supplies in protecting fall-run salmon in the San Joaquin. (DFG)

Reply: The alternatives under consideration are not designed to set flow release requirements for each of the tributaries, or to specifically meet the needs of anadromous fish in each tributary.

Comment: [page 043R] Alternative 2 does not appear to be desirable from a biological resources standpoint because it does not provide needed stream flow improvements to meet salmon habitat and migration needs within the Central Valley. (DFG)

Reply: Comment noted. Chapter VI presents analysis of the effects of each alternative on biological resources.

Comment: [page 043R] If releases from Friant Dam were to be made so as to establish hydraulic continuity between Friant Dam and the Delta, it is likely that fish which would otherwise not migrate upstream beyond the confluence of the San Joaquin and Merced Rivers could be attracted upstream towards Friant Dam rather than into the tributary streams where fish populations now exist. Should that occur, those fish would be lost to the main stem of the San Joaquin River, stranded, with little chance of finding suitable conditions for reproduction. Friant releases could thus deplete the very fish populations that are intended to be benefited, and cannot be justified as a means to achieve improvements in salmon populations or water quality objectives. That consequence is not noted in the DEIR. (FWUA)

Reply: Flow Alternative 5 is the only alternative that results in additional flow releases from Friant Dam. Alternative 5 sets year-round flow requirements for the San Joaquin River upstream of the confluence with the Merced River. Currently, a barrier is constructed each fall on the mainstem San Joaquin River immediately upstream of the confluence of the Merced River to prevent the migration of fall-run chinook salmon into the upper San Joaquin River. If suitable spawning habitat for anadromous fish is not available in the upper San Joaquin River after year-round flow is reestablished, the barrier could be retained.

Comment: [page 44] Recommended flows in the CVPIA's Anadromous Fish Restoration Plan Working Paper are used in the DEIR to indicate the relative quality of riverine aquatic habitat. The Working Paper is a draft discussion paper that was released for review and received substantial criticism from many Bay/Delta stakeholders. The draft Working Paper should not be cited as a reference in the DEIR, and should not be used as a basis for decision making by the SWRCB. In general, it appears that the Working Paper flow recommendations were based on the assumption that higher flow releases would result in improved habitat for anadromous fish. In addition, the analysis of aquatic habitat effects in the DEIR included only the April through June period, while flows at other times of the year also have important effects on aquatic resources. (Butte Co., CCWD, DWR, DFG, GCID, PCWA, Sac, SFPUC, SJRG, SWC, TCCA, USDOI, YCWA)

Reply: Flows in the AFRP Working Paper are not used in the FEIR to analyze the effects of changes in flow on aquatic habitat in upstream areas. Analysis of aquatic resource impacts of the flow, cumulative impact, and Joint POD alternatives in upstream areas has been replaced in Chapters 6, 12 and 13 of the FEIR by an analysis of the ecosystem effects of the alternatives in major rivers in the Sacramento-San Joaquin system.

The Range of Variability Approach (RVA), developed by Richter et al (1997), was used to assess the impact of the alternatives on the aquatic ecosystem on a year-round basis. This approach is based on aquatic ecology theory concerning the critical role of hydrologic variability, and associated characteristics of duration and timing, in sustaining aquatic ecosystems.

Natural hydrologic variation plays a major part in structuring the biotic diversity in river ecosystems as it controls key habitat conditions in the river channel; hydrologic variation is now recognized as a

primary driving force in river ecosystems. The RVA methodology provides an approach to translate this ecological theory to the establishment of streamflow targets based on the natural streamflow regime. The RVA method identifies annual management targets for regulated streams based on a characterization of ecologically relevant characteristics of the unimpaired flow regime. The method then is used to assess the relative suitability of alternate flow management scenarios by calculating the frequency that flows fall within the calculated target range.

In the analyses presented in Chapters 6, 12, and 13, simulated flows for the period of record (1922 - 1993) for each of the flow, cumulative impact, and Joint POD alternatives were compared with flow target ranges based on unimpaired conditions to evaluate the relative suitability of the alternatives in meeting ecological objectives. In some cases, the analysis showed that flow releases modeled for Flow Alternatives 2 - 8 resulted in a shift toward unimpaired conditions, while in other cases, results showed a shift away from unimpaired conditions compared to the base case. Overall, no significant adverse impacts of the flow alternatives on aquatic ecosystems in upstream areas were identified in the analysis.

Reference: Richter, B.D., J.V. Baumgartner, R. Wigington, and D.P. Braun. 1997. How much water does a river need? Freshwater Biology 37: 231 - 249.

Comment: [page 045] Has the SWRCB determined that the flow regimes of the settlement agreements will assure the protection and restoration of chinook salmon and steelhead runs of each respective river or stream? (Smith)

Reply: The subject of this proceeding is the implementation of flow alternatives to meet the water quality objectives in the Bay/Delta Plan. The adequacy of minimum instream flow requirements on each of the tributaries in the Bay/Delta system is not addressed in this EIR. However, the analysis in the DEIR of the effects of the various alternatives on aquatic resources in upstream areas includes a comparison of the ecosystem effects of implementing the San Joaquin River Agreement flows (Flow Alternative 8) to other flow alternatives and the base case. Other proposed flow agreements were not analyzed in the DEIR.

Comment: [page 045] Some level of recirculation of exported water through the Newman Wasteway to the San Joaquin River, a key element of Alternative 6, may be advantageously combined with Alternative 5, to optimize results. Under this alternative potential export increases by the SWP and CVP during periods that are sensitive for aquatic resources should be avoided or minimized until such time as it is clearly established through population monitoring that the public trust resources in or dependent on the Bay/Delta estuary are being adequately protected. (DFG)

Reply: The effects of the flow alternatives on aquatic habitat in upstream areas were modeled on a monthly time step, which is not adequate to analyze the effect of short-duration flow fluctuations. Real-time operational changes, including combination of elements of the various alternatives, could be made on a daily or hourly time step to reduce impacts to fish and wildlife resources. However, these changes cannot be modeled effectively in the analysis. The alternatives were formulated to represent the range of operational conditions that would meet the Bay/Delta Plan objectives.

See also the response to the general comment regarding the range of alternatives addressed in Chapter II, Section E.

Comment: [page 045] We suggest a mitigation measure implementable through language in the water right order similar to the provisions in WR 90-05 and 91-01, that diversions from the Trinity River to the Sacramento River not be done in a manner which would harm Trinity River fisheries and recreation. This would be consistent with Area of Origin statutes, the 1955 Trinity River Act and the Trinity River Basin Fish and Wildlife Management Act of 1984. (Trinity Co.)

Reply: Comment noted.

Comment: [page 046] The fact that construction of dams blocked the passage of anadromous fish is irrelevant in this proceeding and should be deleted. All the major dams were constructed long before the aquatic resources base case of 1984-1994 used in the EIR. (SJRG)

Reply: This discussion has been deleted, since the analysis of impacts in upstream areas no longer focuses only on habitat for anadromous fish.

Comment: [page 046] "Unscreened diversions entrain eggs and larvae." Results of monitoring conducted on the Sacramento River have demonstrated that in addition to eggs and larvae, juvenile, and in some cases adult salmonids are also entrained at unscreened water diversions. (SWC)

Reply: This discussion has been deleted, since the analysis of impacts in upstream areas no longer focuses only on habitat for anadromous fish.

Comment: [page 046] The relationship between water temperature and flow is considerably more complex than suggested by the draft EIR. In general, within a year, water temperature does decrease within a stream segment as a function of increased instream flow releases; the relationship, however, is considerably more dynamic when viewed in context with: (1) the effects of various flow releases on upstream reservoir limnological conditions, (2) the availability of a cold water pool, (3) the location of the release point with regard to water surface elevation within the reservoir, (4) seasonal timing, and (5) the effects of increased instream flows in one year affecting carryover storage and subsequent limnological conditions within the upstream impoundments in subsequent years. (SWC)

Reply: See comment in Chapter VI, Section C. We concur that the factors listed have significant effects on water temperature. The FEIR includes results of water temperature modeling that demonstrate the effects of the flow alternatives on water temperature in the major streams tributary to the Delta.

Comment: [page 047] "Chinook salmon support a commercial and sport fishery and are listed as endangered under both the State and federal ESA's." This sentence should be revised to more accurately reflect that only winter-run chinook salmon are listed under the ESA's, while fall-run chinook salmon, many of which are hatchery produced, are the dominant race supporting the sport and commercial fisheries. (SWC)

Reply: This discussion has been deleted since the analysis of impacts in upstream areas no longer focuses only on habitat for anadromous fish. Current listing status for salmonids has been updated throughout the document.

Comment: [page 047] The DEIR states that, "Year types are defined in the 1995 Bay/Delta Plan (i.e., Sacramento Basin 40-40-30 and San Joaquin Basin 60-20-20 indices defining wet, above normal, below normal, dry, and critically dry year types." Considerable variation exists not only among, but within a water year type category. The use of a general index to determine water year type, although perhaps appropriate from an entire-system perspective, does not account for the climatic variation specifically associated with the American River Basin (i.e., a below-normal year on the system may actually represent a dry year in the American River Basin). Therefore, use of a general index could overlook potential impacts.

Clearly, AFRP flow recommendations, based on storage and inflow in Folsom Reservoir, are different from assignation by water year type using some other system-wide index. Using the Sacramento River water year type index for the American River is not consistent with assignation of water year types on the American River, because AFRP flow recommendations and water year type categories for the American River were based on storage and inflow conditions solely for Folsom Reservoir. This approach does not fully disclose the range of potential impacts. (PCWA-1)

Reply: There are hydrologic differences among tributaries and among years within each water year type. Classification of water year types according to the standard categories for the Sacramento and San Joaquin River systems is appropriate for general comparison of the alternatives. See response to comments for Chapter VI, Section C.2.a, Page 44 for discussion of use of the AFRP flow recommendations.

Comment: [page 048] There is no discussion or documentation that the instream flow regimens discussed (Table VI - 29) will meet the "in good condition" criterion of Fish and Game Code Section 5937. The criterion for "in good condition" has been established by case law and includes 1) the health of the aquatic community, 2) the diversity and abundance of aquatic populations, and 3) the health and overall condition of individuals as well as the aquatic ecosystem (Bear Creek- SWRCB Order 95-4 at 18 to 22, 1995; Putah Creek v. Solano Irrigation District; Sacramento Superior Court No. CV515766, April 8, 1996) and used in SWRCB Order WR 95-17, Lagunitas Creek, October 1995. See California Trout - 1989 for a discussion of the purpose and intent of "in good condition." (Smith)

Reply: The 1995 Bay/Delta Plan identifies specific objectives to protect beneficial uses in the Delta, including fish and wildlife. The proposed project analyzed in the EIR is an administrative action to implement the Plan by allocating responsibility for achieving Plan objectives to water right holders whose diversions affect the beneficial uses of the Bay/Delta. The adequacy of the instream flow requirements in each of the tributary streams is not a subject of this proceeding.

Comment: [page 049] The summary analysis of the effects of the alternatives on flows in the Sacramento River below Keswick Dam should include discussion of the effects of the alternatives on the ability of the CVP to meet the winter-run chinook salmon biological opinion. Specifically, the DEIR should analyze the impacts of each alternative on the water temperatures provided in the Sacramento River for winter-run chinook salmon. (USDOI)

Reply: See responses to comments for Chapter VI, Section C. Results of water temperature modeling for the Sacramento River are presented in the FEIR. Under all of the alternatives, adequate releases would be made to the river on a real-time basis to meet the temperature requirements in the Biological Opinion for winter-run chinook salmon.

Comment: [page 049] The DEIR assumes that spring is the period most biologically important for the fish species assessed. Although spring is an important period, biologically important periods for the fish species addressed occur throughout the year. The DEIR neglects to recognize that an increase in spring water releases in upstream reservoirs reduces availability of water in the summer and fall periods, when water may be needed for other species and lifestages. (PCWA-1)

Reply: The analysis of impacts on upstream aquatic ecosystems in the DEIR was performed on a year-round basis. Results of the analysis are provided in Volume 2, Appendix 2. The DEIR discussed the effects during the spring period which is considered to be particularly important to anadromous fish. Nevertheless, the text in the FEIR has been revised in response to this comment.

Comment: [page 049] An example of how the DEIR mistakenly assumes that increased flows will be more beneficial for fish is given on Page VI-49: "Within the range of flows recommended in the Working Paper, higher flows are, in general, considered to provide better quality riverine habitat and are assumed to increase habitat availability for chinook salmon, steelhead trout, American shad, and green and white sturgeon." "In most other cases, model flows are well over [USFWS Working Paper] recommended flows." The DEIR uses this rationale to suggest the DEIR's analyses demonstrate more favorable riverine conditions for Sacramento River fishery resources than would result from implementation of the higher-than-existing flow regime recommended in the USFWS Working Paper. This is an incorrect assumption. In fact, the available scientific information suggests that the modeled flows in the DEIR will actually create worse conditions, not better conditions. Flows higher than those stated in the USFWS Working Paper are likely to reduce April 30 storage for temperature control, reduce spawning and rearing habitats, alter salmonid growth rates, and cause premature salmonid outmigration. None of these critically important parameters were modeled or assessed in the DEIR. (GCID-1A)

Reply: See comment for Chapter VI, Section C.2.a, Page 44. We concur that aquatic habitat will not necessarily increase with increases in flow in the mainstem Sacramento River.

Section C.2.a.1. Factors Affecting Anadromous Fish

Comment: [page 046] It is difficult to discern how Delta exports would be affected by each of the different flow alternatives. A set of tables comparing the monthly export levels by alternatives would be useful. Also, we remain interested as to: (1) what happens to flow levels in each stream outside of the April through June time period, especially in the fall and winter on all streams and through the summer on steelhead and winter-run and spring-run chinook salmon streams (including temperature modeling output); (2) the effects on the Bear, Mokelumne, and Calaveras rivers; (3) assumptions made to model American River flows; and (4) how share was determined. The revised DEIR should address the issues above relative to the various flow alternatives. (USDOI)

Reply: Delta exports for all months, by alternative, are described on Page VI-5 in Tables VI-9 and VI-10. Flow estimates for all months for the major rivers are provided in Tables VI-13 to VI-28. Temperature modeling results are provided in the FEIR in Chapters 6 and 13 to evaluate instream impacts from implementation of the alternatives. Impact analyses for the major tributary streams are assumed to represent, in general, potential impacts on the minor tributaries.

Assumptions made to model American River flows and the share of obligation to meet the flow objectives among the streams are described in Chapters IV and VI. Assumptions used in flow

modeling for all streams in the Bay/Delta system are described in Chapter IV, Section A. A detailed description of the components of the flow alternatives is provided in Chapter II.

Comment: [page 046] On what basis can the SWRCB claim that the flow alternatives will have little or no effect on habitat access, entrainment, predation, and harvesting and collection? Has the SWRCB analyzed the instream effects of the flow alternatives on the streams tributary to the Bay Delta? The EIR is deficient for failing to fully disclose and evaluate the impacts of its alternatives on the upstream anadromous fish habitat. (SJRG)

Reply: The flow alternatives will have no direct effects on habitat access, entrainment, predation, harvest, or collection of aquatic species in upstream areas.

Analysis of the effects of the flow alternatives on aquatic habitat in streams tributary to the Delta is presented in Chapter VI, Section C of the FEIR. The method of analysis is discussed in response to comment on Chapter VI, section C.2.a, page 44. The effect of the flow alternatives on water temperature has also been modeled; results are presented in this Chapter. The SWRCB believes that the analyses presented in this chapter fully disclose the impacts of the alternatives on upstream anadromous fish habitat.

Comment: [page 046] The needs of the upper Sacramento River previously identified to the SWRCB included operation of the Shasta-Trinity unit of the CVP to accommodate temperature control needs in the river, providing stable river flows to avoid stranding, isolation, and dewatering, and water quality concerns such as Iron Mountain Mine. The DEIR acknowledges that the flow alternatives affect flow fluctuation, temperature, and water quality conditions (page VI-46 paragraph 3, sentence 2). The DEIR then deals with these environmental impacts in the same paragraph by stating that the impacts on flow fluctuation, temperature, and water quality are not analyzed. Without some analysis it is not appropriate to conclude that "It can be reasonably assumed, however, that temperature and water quality conditions are positively affected by increase in flow." This assumption is an oversimplification that does not recognize that an inevitable consequence of increasing flow at one time is decreasing flow or reservoir carryover storage at another time, thereby transferring an impact to another time period or causing a new impact. (DFG)

Reply: See responses to comment for Chapter VI, Section C. Water temperature modeling has been included in the FEIR for the Sacramento River.

Flows were modeled on a monthly time step, the shortest time step possible in the DWRSIM analysis. Daily or hourly flow fluctuations will result from real-time water management operations and may not be directly affected by the flow alternative implemented. Changes in reservoir elevation also were modeled on a monthly time step.

Implementation of the flow alternatives will not directly affect water quality in the Sacramento River. The discharge of contaminants will not be affected by the alternatives. The flow alternatives may have minor effects on the dilution of contaminants in the system, but these effects would be difficult to model on a real-time basis.

Section C.2.a.2. Method of Analysis

Comment: [page 045] The Draft EIR misunderstands the USFWS's rationale for the flow recommendations given in the Working Paper. The USFWS's recommended flow regime focused on achieving a target April 30 Shasta Reservoir storage of 3.0-3.2 MAF for temperature control. The Draft EIR mistakenly focused on assumed increases in riverine habitat with increases in flow, and ignores the issue of temperature control. The significance of this mistake can only be evaluated by examining the effects of the Draft EIR's various alternatives on April 30 reservoir storage. The Draft EIR's assumed relation of higher flows at all times translating to better conditions for fish is counter-intuitive to the USFWS's rationale. (GCID-1A)

Reply: The flows in the USFWS Working Paper are not used in the FEIR to evaluate the effects of the flow and Joint POD alternatives on aquatic habitat in upstream areas. Aquatic habitat will not necessarily increase with increases in flow in the mainstem Sacramento River.

In the EIR, the DWRSIM flow modeling for the Sacramento River included the current operation at Keswick Dam, described in Chapter IV. In the model, the flow releases are determined by balancing carryover storage needs with instream flow needs consistent with the 1993 Biological Opinion for winter-run chinook salmon. Minimum Sacramento River flows at Keswick for October 1 to April 30 are based on October 1 carryover storage in Shasta Reservoir and critically dry runoff conditions to produce a target April 30 reservoir storage of 3.0 - 3.2 MAF for temperature control.

In the FEIR, the results of water temperature modeling are presented for major streams in the Sacramento-San Joaquin River systems, including the mainstem Sacramento River. The effects of the flow and Joint POD alternatives on water temperatures are evaluated using the model results.

See also the responses to general comments for Chapter VI, Sections C and C.2.a.

Comment: [page 046] The DEIR's aquatic resources base case is the period 1984-1994. Since all the major dams under consideration in the DEIR were constructed before 1984, reference to the fact that construction of dams blocked the passage of anadromous fish is irrelevant in the SWRCB's current proceeding and should be deleted. (Butte Co.)

Reply: This section of text has been deleted because the analysis method no longer focuses only on anadromous fish.

Section C.2.b. Reservoirs

Comment: [page 052R] The DEIR indicates that reservoir drawdowns can impact reservoir fisheries and recreation and temporary scenic quality at reservoirs, and that these impacts are not mitigable. The impacts are mitigable to an extent through regular reservoir shoreline revegetation activities such as mixed annual and perennial plant seeding, willow (sp.) and buttonbush plantings and other activities designed to improve early survival of reservoir fish species. It can also reduce the visual impact of barren reservoir shorelines due to drawdowns. Improved management of shoreline grazing practices is also a potential mitigation option. (DFG)

Reply: Revisions made to text. Potential mitigation measures are included in the FEIR.

Comment: [page 056] Impact analyses of reservoir fisheries were conducted based on end-of-month storage over a 73-year average. No information was given on potential fluctuations during any given month. The impact analysis shows results of a "scoring" process, lumped for the months March through September, and averaged over 73 years. Although this "scoring" approach may be appropriate for evaluation of nest dewatering and/or flooding events, it does not address the "needs" of warmwater fish. (PCWA-1)

Reply: The reservoir impact analysis focused on a factor (reservoir elevation fluctuations) that would be directly affected by the flow alternatives and is critical for warmwater fish reproduction. Reservoir elevation data are only available on a monthly time step. Although elevation fluctuations on a shorter time step may affect fish habitat, analysis of monthly data is adequate for general comparison of the flow alternatives.

There are many factors important to survival of warmwater fish in reservoirs. The effects of the flow alternatives on other factors, such as the area of flooded terrestrial vegetation, are a function of reservoir elevation fluctuations and could not be modeled effectively without specific vegetation data. Impacts on inundated terrestrial vegetation can be mitigated by providing additional vegetation in areas within the inundation zone.

Comment: [page 057R] Northern California relies heavily on its scenic and recreational appeal. The DEIR acknowledges that "reservoir drawdowns" can result in potential significant negative environmental impacts to reservoir fisheries and reservoir recreation, and temporary impacts to scenic quality at reservoirs. These impacts are not mitigable. (TCWA)

Reply: The EIR acknowledges that reservoir drawdowns resulting from implementation of the flow alternatives can have significant impacts on reservoir fisheries and recreation. Potential mitigation measures included in the FEIR to reduce impacts to reservoir fisheries, recreation, and scenic quality at reservoirs include additional fish planting, habitat improvement through planting of shoreline vegetation, addition of fish habitat structures, improved management of shoreline grazing practices, and modification or relocation of facilities (such as boat ramps and marinas) to accommodate lower water levels.

Comment: [page 057] Factors affecting reservoir fish: The value of coldwater habitat in reservoirs is substantial, regardless of the logical reasons for its exclusion from the AFRP. (DFG)

Reply: Comment noted. We concur that coldwater habitat in reservoirs is valuable. We have modeled reservoir level changes under the alternatives which relate to changes in coldwater habitat.

Comment: [page 057] Methods of Analysis for largemouth bass spawning and juvenile habitat within upstream reservoirs are based on a relatively complex reservoir habitat index value. The technical bases upon which many of the parameters used in this habitat index do not appear to be based on specific scientific studies or data, but rather appear to be derived from assumptions. Although the impact assessment of the proposed alternatives on upstream fisheries population, and particular warmwater species such as largemouth bass, is extremely important, it is difficult to evaluate the resulting habitat index. Alternative approaches have been used in other water supply and water transfer EIR documents, which provide simpler methods for analyzing potential impacts of downstream water projects on warmwater fisheries habitat within a reservoir. Examples of these reservoir habitat impact criteria can be found in EIRs prepared for the American River related to

flood control operations, the Fazio water transfer (1997), and the EBMUD 1997 supplemental water supply project. (SWC)

Reply: The methods used to calculate the reservoir habitat indices are relatively simple and are described in the text. Spreadsheets used in the analysis are included in Volume 2, the Appendix. Parameters used in the index are based on studies of the habitat requirements of warmwater fish species. The other study methodologies recommended in this comment, were not found to be simpler or better at predicting impacts to the reservoir species than the method used in the DEIR. The analysis therefore was not revised.

Comment: [page 057] Because Folsom Reservoir's warmwater fish species (e.g., bass, sunfish, crappie, and catfish) utilize the warm upper layer of the reservoir and nearshore littoral habitats throughout much of the year, seasonal changes in reservoir storage, as it affects reservoir water surface elevation can directly affect the reservoir's warmwater fisheries resources. Reduced water surface elevations can reduce the availability of nearshore littoral habitats used by warmwater fishes for spawning and rearing.

To assess potential elevation-related impacts to the warmwater fisheries of Folsom Reservoir, the following approach should be used. A relationship between reservoir water surface elevation and acres of nearshore littoral habitat containing submerged structure (e.g., submerged macrophytes and/or inundated terrestrial vegetation) should be developed considering that inundated vegetation extends down to about elevation 410 ft (msl) in Folsom Reservoir, and storage-elevation relationships could therefore be used to calculate the estimated acreage of inundated vegetation associated with end-of-month storages. Using this relationship, the mean number of acres of littoral habitat should be estimated for each month of the primary spawning and rearing period of the year (i.e., March through September) under the various flow alternatives and compared to that modeled for the Base Condition to address fish "needs".

In summary, the DEIR did not sufficiently evaluate impacts to warmwater fish in Folsom Reservoir, and may have underestimated potential impacts associated with implementation of the flow alternatives. (PCWA-1A)

Reply: Largemouth bass were used an indicator species for reservoir impacts. The reservoir impact analysis focused on a factor (reservoir elevation fluctuations) that would be directly affected by the flow alternatives and is critical for warmwater fish reproduction. There are many factors important to survival of warmwater fish in reservoirs. The effects of the flow alternatives on other factors, such as the area of flooded terrestrial vegetation, are a function of reservoir elevation fluctuations and could not be modeled effectively without specific vegetation data. Impacts on inundated terrestrial vegetation can be mitigated by providing additional vegetation in areas within the inundation zone.

Comment: [page 057] Flow recommendations in the AFRP did not "make any recommendations regarding reservoir aquatic habitat" in Central Valley reservoirs, which also means it did not consider area of origin nor the ecological impacts to those reservoirs. The EIR should also address the species and habitat of Central Valley reservoirs which could be tremendously impacted with draw downs of storage water upon which those species (fisheries, wildlife and plant life) rely. (TCCA)

Reply: The Anadromous Fish Restoration Program (AFRP) flow recommendations were designed to improve conditions for anadromous fish spawning and rearing in Central Valley streams. The program did not consider impacts to reservoir fisheries. Impacts of the flow alternatives on

largemouth bass habitat in the major Central Valley reservoirs are described in this Section b. Largemouth bass were selected as an indicator species to represent other warmwater reservoir species, since it is the most sensitive to fluctuations in water levels.

Comment: [page 058] It should be noted that New Don Pedro and Lake McClure are not SWP or CVP reservoirs. (SJRG)

Reply: Revision made to text.

Comment: [page 059] Consistent with our general comments, we believe the conclusions drawn about fisheries, vegetation, recreation, and scenic impacts are incomplete and need additional analysis. Assuming for the sake of analysis there is some CEQA responsibility for these impacts, DWR believes that proper analysis for reservoir operations is that the reservoir operators have jurisdiction for mitigation measures and that reservoir impacts associated with the implementation of the 1995 Bay/Delta Plan are generally temporary and are mitigable. For example in the case of fishery impacts at Lake Oroville, DWR has employed in the past numerous measures to enhance fisheries after the lowering of the reservoir, including planting fish and improving fish habitat by planting vegetation. Similarly, DWR has lowered boat ramps to improve recreational access. DWR also disagrees that the temporary lowering of the lake level, which results in additional shore exposure, is considered a significant impact for an artificial lake when such lowerings are part of normal operations. (DWR)

Reply: Page VI-53 of Volume 4 states "The degree of impact will depend on the magnitude and timing of the drawdown". This statement is accurate for describing impacts to fisheries, vegetation, recreation, and scenic impacts. Also see general comment for Chapter VI, Section C.2.b, Page 59.

Comment: [page 059] The DEIR fails to analyze the probable adverse economic impacts from significant adverse impacts on reservoir fisheries in the counties where these major reservoirs are located. Lake Oroville is located within Butte County and the county, the City of Oroville, and other communities within the county benefit from the recreational revenues related to the reservoir fisheries at Lake Oroville. (Butte Co.)

Reply: See general comment for Chapter VI, Section C.2.b, Page 59. Impacts to reservoir fish in the FEIR are identified as generally temporary and mitigable. Potential mitigation measures are included in the FEIR. Adverse economic impacts are therefore not anticipated.

Comment: [page 59] The EIR states that implementation of the flow alternatives will result in significant impacts to reservoir fisheries, and then concludes that the impacts cannot be mitigated. It is not sufficient to merely state that the effects on reservoir fisheries are not mitigable; under CEQA, the SWRCB is required to propose and describe potential mitigation measures to minimize for each significant environmental effect identified in the EIR. (Butte Co., DFG, DWR, SJRG, SWC)

Reply: Impacts to reservoir fish in the FEIR are identified as generally temporary and mitigable. Proposed mitigation measures are included in the FEIR. These measures include additional fish planting, habitat improvement through planting of vegetation, addition of habitat structures, and improved management of shoreline grazing practices.

Section C.3. Vegetation and Wildlife

Comment: [page 57] The DEIR does not address the impacts that curtailment of diversions would have on the wetland habitat in the Central Valley. Fallowing in agricultural lands upstream of established wetland areas could substantially reduce the historical water supply.

The DEIR does not recognize that the environmental values of non-riparian wetlands and waterfowl habitat can only be maintained with an adequate water supply. The impacts of curtailing water supply to wildlife refuges and private duck clubs are not identified or analyzed. (BSWA, DFG, VWPA)

Reply: Among the assumptions for analyzing the impacts of the alternatives was that, under the CVPIA, there would be continued delivery of water to most of the wildlife refuges. For the private land owners that divert surface water to support wetlands, most of the diversion for fall flooding of fields occurs outside the period of impact. In addition, much of the surface water that is used in the established wetland areas in the summer is tailwater from irrigation districts with pre-14 water rights. Most pre-14 water rights will not be curtailed under any of the flow alternatives. Therefore, this water supply will not be affected. It is likely that private landowners in these areas who hold individual water rights will also not be affected, as they have not been notified of the proposed action and their rights are small.

For the refuges that are not included in the CVPIA and the land owners that maintain wetlands and that may have surface water diversions curtailed under some alternatives, it is likely that an alternate source of water would be sought, either through contract or from groundwater. Therefore the SWRCB does not anticipate any significant impacts to non-riparian wetlands and waterfowl habitat.

Comment: [page 061] Changes to river stage throughout the drainage will affect wetted channel periphery and thus affect riparian vegetation and associated wildlife. If contaminants such as selenium are included in the analysis of changes to flows on the San Joaquin River and its tributaries, vegetation and wildlife may be affected by different alternatives. (USDOI)

Reply: Changes in river stage throughout the San Joaquin River basin are expected to be either insignificant or beneficial. The flow alternatives by themselves have no impact on total selenium loading, though they may result in lower concentrations during some months as a result of higher flows.

Comment: [page 061] The DEIR states that modeling studies assume that no land fallowing will occur as a result of the adoption of a flow alternative. As stated in the comments of Mr. Van Camp, it is entirely possible that the adoption of flow alternative 3, 4, or 5 could lead to land fallowing. The DEIR should have analyzed this impact and the failure to analyze the impact constitutes a violation of CEQA. (SVWU)

Reply: The DEIR acknowledges in Chapter VI, section C.5, that fallowing could occur under Flow Alternative 5, particularly in the Tulare Basin. Under Alternatives 3 and 4, the general assumption was that water right holders who were curtailed would seek contracts. The reasonableness of this assumption is addressed in the general comment on contracting issues in Chapter II.

Section C.3.b. Impact on Vegetation in Reservoir Drawdown Zones

Comment: [page 059, 66, 103] The DEIR concludes these impacts may be significant and are not mitigable. Pursuant to CEQA Guideline section 15261, ongoing reservoirs are exempt from CEQA requirements. In addition, CEQA case authority provides that environmental impacts associated with reservoir operations are not subject to CEQA. (Nacimiento Regional Water Management Advisory Com. v. Monterey County Water Resources (1993) 15 Cal.App.4th 200.). The consequences of this authority are that impacts associated with ongoing reservoir operations on fisheries, recreation, and scenic values are not subject to CEQA requirements. (DWR)

Reply: Comment noted.

Section C.3.c. Waterfowl at Reservoirs

Comment: [page 067] The DEIR, on page VI-67 and in Tables VI-51a, b, and c and VI-52, fails to identify impacts to the shallow water, mid-water, and open-water habitat for waterfowl at Pardee and Camanche Reservoirs. This habitat would be significantly affected by the extremely low reservoir levels which would result under SWRCB flow Alternatives 3, 4, and 5. The EIR should note these waterfowl impacts created by SWRCB flow alternatives. (EBMUD)

Reply: The model output of EBMUDSIM received by the SWRCB did not include reservoir surface area data. Therefore the requested analysis can not be performed.

Section C.5. Land Use

Comment: [page 070] Without sufficient information on potential land use changes and their impacts, the public is prevented from substantive participation in the environmental review process. The DEIR should be revised to adequately describe potential land use changes and their environmental consequences. (Woodland)

Reply: The potential land use changes from the flow alternatives are discussed in the DEIR on pages VI-71-72. The general conclusion is that implementation of the 1995 Bay/Delta Plan could result in shifting crop patterns and some amount of land retirement. However, it is difficult to predict how reduced water supplies would translate into changed land uses due to the variety of complicating factors.

In the Yolo basin, the impact of the flow alternatives would be minimal. The majority of the Sacramento River water right holders in this area, listed on Table II-5, already have contracts for supplemental water with either the CVP or the SWP. The upstream rights on Cache Creek held by Yolo County Flood Control and Water Conservation District are for storage only. These storage facilities rarely store water during the months when Term 91 would be invoked. Likewise, Alternative 5 would have no impact, as Putah and Cache Creeks have been excluded from the Alternative.

Comment: [page 070] Due to the simplifying assumptions for Alternatives 3 and 4 (see comments regarding Chapter V, above), fallowing was not considered. Water supply reductions under Alternative 5 are considered to be "the more severe, and could result in widespread fallowing." Impacts on permanent crops such as Stanford Vina's orchards, which cannot be fallowed, are not considered. (SVRC)

Reply: Stanford Vina's orchards are not impacted under Alternatives 3 and 4 as their rights are not included in Table II-5 nor are they impacted under Alternative 5 as they are not a reservoir owner listed in Table II-8. As noted in the DEIR, the expected response to agricultural water shortages would be a fallowing of lower value annual crops in favor of higher valued permanent crops.

Comment: [page 070] The DEIR should analyze the impacts of the lack of surface water and groundwater recharge on land use. (TCCA)

Reply: With the exception of Sacramento County, the Sacramento Basin groundwater system is in a state of balance. In fact, in some reaches of the Sacramento River, soils are waterlogged from high water tables. A switch from irrigating with surface water to irrigating with groundwater will not have a significant effect on water levels in the basin and will not significantly affect the groundwater supply. The consumptive use of all direct diverters in the Sacramento Basin without contracts for supplemental water was calculated to be 107 TAF per year (DEIR page A3-16). Replacing 107 TAF of contract supplies with groundwater in the Sacramento Basin should have little to no impact on groundwater supplies, or on land use.

Comment: [page 070] "Implementation of the 1995 Bay/Delta Plan outflow objectives will result in either no changes in upstream water deliveries or reduced water deliveries to upstream areas in Alternatives 3, 4, 5, and 7, when compared to the base case (see Tables V-1 and V-2). Use of the term "deliveries" would normally be assumed to mean only deliveries to customers from storage projects, and not water diverted by direct diverters under their own water rights. Is this the meaning of "deliveries" in the quoted language? There is the same uncertainty in the DEIR language in the use of the term "water deliveries", in the middle paragraph on page XI-2. Does this discussion and do the resultant impacts exclude "diversions" under private water rights? (CFWID)

Reply: In the quoted language, the term "deliveries" refers both to water directly diverted and water released from storage.

Comment: [page 071] The DEIR dismisses land use implications by saying: "Due to the wide range of factors governing a water user's response to reduced supply, it is difficult to predict how such reductions would translate into changed land use patterns." DEIR, p. VI-71. The DEIR fails to support such conclusions with the rigorous analysis and concrete substantial evidence. This failure deprives the RCRC an opportunity to apply member counties' substantial land use experience and knowledge to the growth impacts of this decision, which could result in a bad decision by the SWRCB. (RCRC)

Reply: Comment noted. Flow Alternatives 3 and 4 apply to water right holders listed on Table II-5. Relatively few of these rights are located in the RCRC member counties. In general, the majority of water rights in the outlying regions are too small to be considered in the DEIR analysis or be included in the Public Notice for the Water Right Hearing.

Comment: [page 071] The DEIR fails to describe the consequences of shifting water from food production to the Bay/Delta environment. The DEIR proposes, in essence, a reduction of irrigated acres in California and the DEIR has failed to discuss the most important trade-off proposed by the alternative projects. It is, therefore, insufficient and should be redrafted to consider the following points:

1) Irrigated acreage per capita in the world has declined;
2)This trend will likely continue because new reservoir sites are few and irrigation projects are expensive; and,
3) The salinization and urbanization of irrigated acreage, as well as governmental inattention and interference, are leading to a worldwide decline in irrigated agricultural production. (BWGWD)

Reply: The discussion of effects on land use in the upstream areas (Ch.VI.C.5) does address the potential impacts to irrigated agriculture that may result from a reduction in water deliveries due to the implementation of the 1995 Bay/Delta Plan outflow objectives. It states that "Reduced water supplies can lead to regional changes in land use by shifting the types of crops grown, short-term fallowing, or long-term retirement of agricultural land." However, the expectation is that, if water supply shortages persist and agricultural lands are permanently retired, the most marginal lands would be taken out of production first. The discussion points out that land use changes are difficult to predict because such changes are the result of numerous decisions which consider many factors in addition to water supply. To consider the worldwide implications (as this comment appears to suggest) of the potential impacts to land use identified here, would probably not be meaningful. Likewise, a discussion of the theories on the causes and effects of a worldwide decline in irrigated agricultural production, is beyond the scope of this EIR.

Comment: [page 072] On page VI-72, shortages are greatest under Alternative 5 in the San Joaquin River, Merced River, and Tuolumne River watersheds. (SJRG-2)

Reply: Text changed to read: "...shortages are greatest for the Friant Project and in the Yuba, Bear and Mokelumne river watersheds."

Comment: [page 71R] The DEIR makes the inaccurate assumption that groundwater is the principal source of supply for urban uses in the upper Sacramento River watershed. See Shasta CWA's prior comment on this subject. (Shasta CWA)

Reply: This comment mischaracterizes the statement in the DEIR regarding urban use in the areas upstream of the Delta. The statement in the DEIR on urban water use in upstream areas is based on information in Bulletin 160-93 which specifically states: "A few of the larger cities in the region take a major share of their water supplies from the major rivers. But throughout most of the Sacramento River Region, groundwater is the principal source of water for urban and rural dwellers." (vol. 2, p. 130)

The DEIR contains a general statement that is true for the upstream areas as a whole but may not be true of a specific area like Redding. As a USBR settlement contractor and water right holder, the City of Redding may be one of the "few larger cities" referred to in the above quote from Bulletin 160-93.

Section C.6. Urban Development

Comment: [page 071] Urban Development; Growth Inducing Effects: The 1995 Bay/Delta Plan implementation could increase water supply reliability to some urban areas therefore impacts are possible. One exception is the area served by Stockton East Water District. (DFG)

Reply: The DEIR discussion of the effects to urban development referred to in this comment states that "with the exception of Stockton East Water District, no major urban suppliers in the upstream

areas will incur surface water delivery reductions as a result of implementing the flow objectives." This does not mean that implementation of the 1995 Plan would increase water supply reliability to some urban areas. The DEIR does not indicate that urban water supply reliability would increase in upstream areas and the commentor provides no explanation to support this claim.

Comment: [page 071] The statement that no major urban suppliers will incur surface water delivery reductions is incorrect. The City of Modesto obtains its surface water supplies from the Modesto Irrigation District. In the event of delivery curtailments, the City of Modesto's supplies are reduced in the same proportion as other Modesto Irrigation District customers. (SJRG)

Reply: The water supply analysis (Ch. V) indicates that Modesto Irrigation District would experience some reduction in surface water deliveries under Flow Alternative 5. To the extent that MID provides surface water to the City of Modesto, it is likely that, under Alternative 5, the City would experience some reduction in the surface water that it receives. The text has been revised to clarify the discussion of effects to urban development.

Comment: [page 071] The DEIR indicates that in the upstream areas, groundwater is the principal source of supply for urban uses. It is further indicated, in discussing urban development impacts, that in the model results, no major urban suppliers in the upstream areas incur surface water delivery reductions as a result of implementing the objectives. This statement is inaccurate, and the assumption made has been used throughout the DEIR environmental impact analysis.

"DEIR Chapter 5" indicates that, with the exception of the Stockton East Water District, no major urban suppliers in the upstream areas will incur surface water delivery reductions as a result of implementing the objectives. However, the City of Redding possesses substantial water rights along the Sacramento River, which have consistently been put to beneficial use to the extent of approximately 20,000 acre feet annually. These rights have been recognized by USBR and existing Selma contracts; however, these rights have not been included in the listing of Upper Sacramento River watershed water rights which may be affected by the SWRCB action on Bay/Delta water quality and related pending petitions.

The failure of the DEIR to identify potential significant adverse impacts, is a major oversight. Accordingly, the DEIR should be modified to reflect the City of Redding's settlement contract and acknowledge other similarly situated water users within the Sacramento River watershed. (Shasta CWA)

Reply: The City of Redding has post-1914 appropriative direct diversion rights to 6.14 cfs for consumptive use. These rights are held under water right application numbers 6716, 8884, 10320 and 26559. The total face value of these rights amounts to 4437 acre-feet per year. The proceeding before the SWRCB involves only parties with total consumptive use rights of 5000 acre-feet per year or more. Because the City of Redding's rights are less than 5000 acre-feet, the city is not a party to the action before the SWRCB, and the city's water rights were not considered in the DEIR. The water rights decision resulting from this proceeding will not affect the City of Redding's water rights. If the SWRCB extends the methodology for determining responsibility for the objectives to other water right holders, it will only do so after proper notice and environmental documentation.

The City of Redding also is a settlement contractor with the USBR. Implementation of the flow objectives will not alter or change delivery of water to the City of Redding by the USBR under the settlement contract.

Comment: [page 071] "Section 6. Urban Development" states that "with the exception of the Stockton East Water District, no major urban suppliers in the upstream areas will incur surface water delivery reductions as a result of implementing the flow objectives". Tables V-1 and V-2 show that the North Bay Aqueduct service area of the SWP is projected to have surface water delivery reductions. Does the SWRCB consider the North Bay Aqueduct water users are in the "upstream areas"? (SCWA)

Reply: For the purpose of this report, the North Bay Aqueduct water users are considered to be in the export areas, not upstream areas. The environmental effects in the export areas are addressed in Section D of Chapter VI. The export areas are defined as those areas receiving water through the Delta-Mendota Canal, the California Aqueduct, the Contra Costa Canal, the North Bay Aqueduct, the South Bay Aqueduct, the Mokelumne Aqueduct, and the Hetch Hetchy Aqueduct. The analysis indicates an overall reduction in deliveries to export areas served by the SWP and the CVP under each alternative.

Comment: [page 072] The analysis of impacts to groundwater resources in Sacramento County is faulty because it failed to account for the curtailment of Carmichael Water Districts' diversions from the American River under Flow Alternatives 3 and 4. The DEIR states that: "In upstream areas, groundwater is the principal source of supply for urban uses. No major water suppliers will incur surface delivery reductions as a result of implementing the flow objectives."

The analysis in Chapter V shows that CWD's surface diversions would be curtailed by 50 percent in half of all summers and completely prohibited in approximately one third of all summers. By not considering the CWD's diversion curtailments, the DEIR reached the wrong conclusion regarding impacts to the Sacramento County groundwater basin. Curtailment of CWD's diversion under Alternatives 3 and 4 will intensify the overdraft problem in Sacramento County. This comment provides significant new information as defined in Public Resources Code section 21092.1. As a result the DEIR should be recirculated for additional review and comment when it has incorporated the new information and fully addressed the impacts of the proposed alternatives. (CWD)

Reply: The CWD's water rights have a cumulative face value greater than 5 TAF per year, and are thus included in the EIR's evaluation of impacts. However, CWD serves a population of 37,000 within a metropolitan area of over 1 million people. Alone, the CWD is not a major urban supplier. The CWD 1996-1998 Report of Licensee indicates that diversions averaged 5.4 TAF per year. The 1993-1995 Report of Licensee indicates that CWD irrigated 465 acres of parks. Based on this figure, consumptive use of water for irrigation in the district was estimated to be about 1.2 TAF per year. The additional consumptive use at residences in the district is minimal.

Overdraft in the Sacramento County area is estimated to be about 33 TAF per year based on a 1990 level of demand. If the CWD were to increase its groundwater use in response to curtailed diversions under Alternatives 3 and 4, overdraft conditions in the county would worsen; however, based on the consumptive use of water in the district, the impact is not significant. Because this new information does not result in the disclosure of a new significant impact, recirculation of the EIR is not required.

Comment: [page 72] If CWD's diversions were curtailed under Alternatives 3 and 4, social impacts would result in terms of quality of life, property values and economic activity. Aesthetics would be adversely and significantly altered. Energy usage and attendant costs would increase from loss of shade trees. Turf areas would be lost and community recreation would be disrupted. The need to

provide fire flow capability would be severely compromised during the main portion of the fire season. (CWD)

Reply: Your comment is noted. However, the assumption underlying this comment is that alternative water supplies are not available to the CWD in the event that its diversions are curtailed under Flow Alternatives 3 and 4. CWD has the option of continuing its pursuit of a settlement contract with the USBR, arranging for water transfers, and expanding its conservation programs. Contrary to the comment, contracts and transfers are viable and practicable alternative water supplies and seem the more likely response to diversion curtailments. Furthermore, CEQA does not require mitigation of social or economic effects, although they are considered by decision makers.

Section C.6.a. Growth-Inducing Effects

Comment: [page 071] Growth inducing impacts of water availability is not analyzed but rather summarily dismissed. Likewise, the unreasonableness of desert development without corresponding development of adequate water supply is not analyzed. (CDWA)

Reply: The basic assumption made in the assessment of effects to urban development is that growth-inducing impacts are only associated with additional water supplies. The water supply analysis indicates that implementation of the flow alternatives would not result in additional water deliveries; therefore, no growth-inducing impacts would be anticipated.

Reasonableness-of-use is an issue to be considered by the SWRCB in approving or modifying water right permits, but in this context it is not an environmental impact subject to analysis and documentation under CEQA. Desert development is not the action being considered by the SWRCB in this EIR. Furthermore, the page identified in this comment refers to the discussion of environmental effects in the upstream areas. We are unaware of any potential desert development that might occur in the upstream areas, or the export areas for that matter, as a result of implementing the 1995 Bay/Delta Plan.

Comment: [page 071] The DEIR should have evaluated the potential impacts of Flow Alternatives 3, 4, and 5 in encouraging the urbanization of the Central Valley. The failure of the DEIR to include this analysis violated CEQA. (SVWU)

Reply: There is no evidence to suggest that diversion curtailments will lead to large-scale retirement of farmland or conversion of that land to urban uses. First, the availability of farmland is not the critical factor driving the conversion of farmland to urban uses; proximity to growing urban areas is more important. Second, the severity of the water shortages modeled for the flow alternatives are not great enough to cause widespread retirement of farmland. Third, a lack of water for farmland during parts of the year would make conversion of the land to urban uses unlikely because a reliable, year-round water supply would be even more critical for urban uses.

Very large areas of land in the Central Valley are being economically farmed using water supply contracts or pumped groundwater. These areas have extensive agricultural infrastructure, good soil and excellent climate. Based on these considerations, assuming that these lands will stay in production in the event of reduced water supply is reasonable.

A study by Archibald et al. (1992) of the response of the agricultural community to reduced water supplies concluded that agricultural producers will respond to decreased surface water supplies in one

of three ways; (1) obtaining alternative sources of supply; (2) increasing water use efficiency; and (3) matching land use and cropping patterns to available water supplies through a combination of fallowing and shifts in crop type. (DEIR, pages VI-71 to VI-72).

Comment: [page 071] Second sentence should be modified to state: "Water is one of many factors influencing growth in a region but does not, by itself, cause the growth of a region." (DWR)

Reply: Text modified as suggested.

Comment: [page 072] The conclusions reached here that reduced water availability is unlikely to affect growth in urban areas would appear to be outdated. Given current trends closely tying development approvals to water availability it does not appear that this conclusion is supportable without further site specific analysis. (SEWD)

Reply: Development approvals are tied to water availability in some areas. However, this is not the general trend in the study area. Growth patterns historically have been influenced by market conditions far more than by any other factor. Water shortages have rarely done more than slow the progress of adequately financed development projects. Because the costs of water supply augmentation projects can usually be spread over a large user base, the cost of new supplies has seldom been high enough to significantly reduce the profitability of new development projects.

Comment: [page 072R] The DEIR simply assumes that reduced water deliveries would not have growth-restricting effects in the City of Stockton. With regard to California water, one cannot simply conclude that historic patterns indicate future trends. Major changes in the availability of alternative supplies of water render that assumption insupportable. Because of the overdrafted East San Joaquin County groundwater basin and the water quality problems resulting from saline intrusion, replacing lost surface water supplies with groundwater is an environmentally harmful option and there is no evidence that the other measures mentioned would be sufficient to replace the lost supply. (Stockton-2)

Reply: Your comment is noted. CEQA guidelines require that an EIR discuss "the ways in which the proposed project action could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." (Section 15126.2 (d)). The project proposed in the EIR will not foster growth. CEQA does not require that growth restricting impacts be analyzed. Section C.6.a of Chapter VI in the DEIR identifies actions that are typically taken in response to reduced urban supplies. These actions are not meant to be exclusive. Other actions, such as contracting for alternative supplies through water transfers, are discussed in Chapter V of the EIR.

Section C.6.b. Urban Landscape

Comment: [page 072] The suggestion that xeriscape landscaping would eliminate adverse impacts to reduced urban water supplies is incorrect. (CWD)

Reply: Comment noted. The discussion of xeriscape has been deleted from the text.

Comment: [page 072, 126] Paragraph 2. This paragraph should be revised because of several factual errors. There are landscape requirements under the Best Management Practices for Urban Water Conservation in the Memorandum of Understanding for Urban Water Conservation in California, but there are no BMP's requiring xeriscaping. The statement that most of the urban agencies receiving export water from the Delta have signed the MOU is subject to question. Approximately 150 agencies out of the 430 that supply over 3,000 acre-feet (that have over 3,000 connections) have signed the MOU. A more appropriate statement would be that most of the urban water exported from the Delta is delivered by agencies that have signed the MOU. (DWR)

Reply: Revisions made to text as suggested.

Comment: [page 073R] The DEIR states: Cutbacks would mandate more efficient water use, as mandated by the MOU among urban water agencies, resulting in more xeriscape landscaping. This conclusion could be valid only if "resulting in more xeriscape landscaping," equates to creating a suburban desert by desiccating existing landscaping. The impacts on vegetation, wildlife, and social systems of achieving this sudden, forced mass conversion, described above, are not addressed in the EIR. (CWD)

Reply: The DEIR does not suggest a sudden, forced mass conversion to suburban desert by desiccating existing landscaping. Rather, the text in this discussion states "(t)he reduced supplies to upstream areas that could result from the flow alternatives are likely to result in locally-mandated, more efficient management of water resources." The text goes on to point out that the Memorandum of Understanding for Urban Water Agencies of California includes xeriscape programs among its elements of more efficient water management. However, the Best Management Practices for Urban Water Conservation, which are included in the MOU and are most likely to implemented, do not require xeriscape. The point of the discussion in the DEIR was not to imply that implementation of the 1995 Bay/Delta Plan would result in the instantaneous conversion of the urban landscape to xeriscape, but rather that local implementation of xeriscape programs could be among the responses to reduced water supplies in urban areas.

With regard to the comment that the impacts of changing to xeriscape are not addressed in the EIR, the comment implies that xeriscape has a lower environmental value than traditional landscaping and that such a change would result in a significant adverse impact to the environment. Traditional landscaping supports a rather large population of a few non-native species. The habitat value of xeriscape is likely to be equal to or higher than traditional landscapes, therefore, no significant impacts to vegetation or wildlife are anticipated if the use of xeriscape increases in response to reduced water supplies. We are unaware of any potential impacts to social systems as they relate to this comment. The text of the FEIR has been revised for clarification and the discussion of xeriscape has been deleted.

Section C.6.d. Socioeconomic Effects

Comment: [page 073R] The Plan states that "offsetting the negative impacts of the flow alternatives of businesses is a quality of life improvement that will result from improved water quality in the Bay/Delta Estuary" (page VI-72). Again, the Plan is trading one area, this time economic area, for another, thus degrading the quality of life in the Sacramento Basin for the improvement of quality of life in the Bay/Delta Estuary. This goes against the principles of the area of origin statute. (TCCA)

Reply: This is not a comment on the environmental effects of implementing the 1995 Bay/Delta Plan. However, protection of the public trust resources is not necessarily inconsistent with area of origin protections.

Section C.7. Energy

Comment: [page 072] Pages VI-72 to VI-77, Energy. This section does not fully discuss CVP load requirements and the magnitude of the effects on the CVP load from the proposed alternatives. It would be helpful to see tables or graphs depicting Project-use requirements from the base case and the alternatives. (USDOI)

Reply: The net generation tables were revised in the FEIR to show net hydroelectric power generation for the base case. Data for Alternatives 2-8 are expressed as differences from the base case. Net generation for each alternative can then be calculated by adding or subtracting the change in net generation from the base case.

Comment: [page 72] The economic and environmental impacts associated with the energy impacts of the project are inadequately addressed in the DEIR. The statement at the bottom of the energy section that states these impacts are not mitigable is ambiguous. Because the section refers to several types of impacts: hydroelectric, groundwater pumping, and fossil fuels it is not clear which impacts are not considered mitigable, why are they not mitigable, and what is the level of the impact.

Further, economic losses that result from the reduced availability of hydroelectric power during peak periods should be compensated. (Butte Co., DWR, FWUA, SMUD, SJRECWA, SJRG, TCCA, WWD)

Reply: The impacts of the project to energy may result from decreased generation of hydropower or increased consumption of power from pumping either surface or groundwater. The SWRCB conducted a quantitative analysis of the impacts of the project on SWP and CVP hydropower generation and consumption and a qualitative analysis of the impacts of the project on (a) non-SWP/CVP hydropower generation and consumption and (b) the secondary environmental effects of measures which might mitigate the effects of the project on energy. The SWRCB does not have access to quantitative models which are capable of predicting the effects of the proposed project alternatives on non-SWP/CVP power generation or consumption. It would be speculative for the SWRCB to attempt to predict which of the many potential operating decisions a project operator might make in response to varying conditions. Therefore, the SWRCB's analysis regarding non-SWP/CVP hydropower producers is necessarily qualitative (California Code of Regulations, title 14, section 15145).

The discussion of the energy impacts of increased pumping of groundwater is qualitative for similar reasons. The "Groundwater Pumping" discussion in this section of the DEIR refers only to energy impacts of increased groundwater pumping. Other impacts of increased groundwater pumping are discussed in section C.11. The statement regarding regulation of groundwater has been deleted from the energy discussion.

Regarding the impacts of the proposed mitigation measures, the SWRCB has revised the DEIR to clearly identify which impacts are significant, which ones are mitigable to levels that are less than significant, and which impacts cannot be mitigated. Off-peak pumping has been identified as a mitigation measure for the energy impacts of increased groundwater pumping. Based on the

SWRCB's energy analysis, the construction of new power plants as a result of implementation of the 1995 Bay/Delta Plan is not expected. An analysis of air quality impacts resulting from increased fossil fuel consumption at existing power plants was not conducted because of the uncertainty of where the power (and associated increase in air emissions) would be generated.

The SWRCB notes the commentors' concerns regarding the economic effects of changes in hydropower generation and of the purchase of replacement power for lost CVP hydropower. The SWRCB does not anticipate that the project will result in lost opportunities to purchase hydropower from the CVP. The overall impact of the project on SWP and CVP hydroelectric power operations is minor as are the differences in hydroelectric power generation between the alternatives. Most of the alternatives analyzed in the DEIR result in reductions in energy consumption due to greater pumping restrictions. Increases in annual net energy generation produced by the SWP and CVP will result in an increase in available energy over that provided under D1485. The DWR indicates that "over a 73-year period, there will be essentially no difference in hydroelectric generation by SWP or CVP unless the alternatives change the amount of floodwater spilled." (DWR's comments on the Bay/Delta EIR).

CEQA does not require mitigation of economic impacts that result from a proposed project, including the economic impact of the loss of hydropower generation on individual producers, unless economic impacts lead to secondary environmental impacts. Therefore, the DEIR will not be revised to address these effects; however, the SWRCB will consider economic impacts disclosed in the DEIR and entered into evidence by parties at the hearing when it makes its decision on how to implement the 1995 Bay/Delta Plan.

Section C.7.a. Hydroelectric Power Availability

Comment: [page 073] Hydroelectric power generation: Power bypass or adjustments at New Melones Reservoir or Lake McClure may be necessary as a component of coldwater pool management under some alternatives. Absent an assessment of temperature impacts and mitigation under the alternatives, the assessment of impacts to power production may be incomplete. (DFG)

Reply: Water supply reservoirs are operated to achieve a variety of purposes, only one of which is coldwater pool management. Any modeling exercise must be based on assumptions regarding how operations would be affected by various conditions. The SWRCB does not have any information regarding how Merced Irrigation District would operate Lake McClure for the purpose of coldwater pool management relative to other reservoir purposes. An analysis of the effects of the alternatives on temperature is included in the FEIR. This analysis indicates that there are no significant impacts of the alternatives on temperatures on the Stanislaus River. Therefore, implementation of the alternatives is not likely to result in significant changes in reservoir operations to manage coldwater pools; thus, no related significant impacts to power production are expected.

Comment: [page 074R] The analysis of the impacts of Alternative 5 fails to acknowledge the significantly reduced hydropower generation at Friant Dam (and the resulting increase in the use of fossil fuels) which would be caused by the substantial release of water prescribed by Alternative 5. (FWUA)

Reply: The SWRCB used DWRSIM modeling output to evaluate potential impacts of Alternative 5 on hydroelectric power production at Friant Dam. Modeled releases from Friant Dam to 1) the San Joaquin River, 2) the Friant-Kern Canal, and 3) the Madera Canal were compared for Alternatives 1 and 5. The modeling showed no change in deliveries down the Madera Canal and a 73-year averaged

reduction in Friant-Kern Canal deliveries of 423 TAF, as shown in Table V-1. This reduction in deliveries to the Friant-Kern Canal will result in a reduction of hydropower generation at the Friant-Kern Canal power plant. A shift in releases from the Friant-Kern Canal to the San Joaquin River under Alternative 5 will most likely not result in significant new hydroelectric power generation at the San Joaquin River power plant because of the limited capacity of this power plant. The associated loss of hydroelectric power generation under Alternative 5 could be offset by constructing a larger power plant on the San Joaquin River below Friant Dam that has sufficient capacity to handle the increased flows prescribed under Alternative 5. In the absence of said power plant, the implementation of Alternative 5 will result in impacts to the Friant Project's hydroelectric power production. A description of the increased use of fossil fuels is provided as part of the energy impacts section of the DEIR. This description is applicable to all of the alternatives.

Comment: [page 074R] As of the date of the report, the DWRSIM model does not have the capability to adequately simulate and calculate CVP load. Accordingly, results shown on Table VI-53 and Figure VI-29 may not fully represent the proposed alternatives' impacts on the CVP energy and capacity available for sale (generation less Project-use). (Same comment for Table VI-54 and Figure VI-30.) (USDOI)

Reply: Comment noted. The model results are used for qualitative comparisons among alternatives, and are not intended to provide quantitative predictions of actual conditions.

Comment: [page 075R] The DEIR on the 1995 Bay/Delta Plan noted on page VI-75 of Volume One, that "reservoirs, which have power-only filings, will not be affected". Refer to District comments submitted March 31, 1998. The revised chapter under the heading Impacts On Other Facilities, page VI-76, states that "Water rights for reservoirs with power as the main purpose will not be affected by the alternatives." We are assuming that these two statements are consistent with each other. Further it is stated that "Multi-use reservoirs that generate power ... will have to change their operation that will affect hydropower operations." Since the Upper American River Project (UARP) reservoirs have power-only filing on them we are assuming that the operations of SMUD Upper American River Project will not be affected. Additional discussion in the FEIR is necessary to determine which non-SWP or CVP-related facilities will be affected. (SMUD-2)

Reply: The text on page VI-75 indicates that reservoirs with power-only filings will not be affected. Since SMUD UARP reservoirs are power-only filings, their operations should not be affected.

Section C.7.b. Ground Water Pumping

Comment: [page 079R] The CALFED Draft PEIS/EIR estimated the weighted average price for groundwater is $30-$60 per acre foot in the Sacramento River Region and $30-$80 per acre foot in the San Joaquin River Region. Therefore, it appears the costs of pumping groundwater are substantially underestimated in the SWRCB's EIR, thereby understating certain impacts. (FWUA-2)

Reply: It is not clear whether or not the "weighted average price" (which is actually portrayed as a range) stated in the CALFED PEIS/EIR includes the costs of land subsidence, including damage to structures, failure of well casings, and surveying costs. The range of pumping costs portrayed in the SWRCB's DEIR includes pumping costs alone. Further, the source for the data provided in the CALFED PEIS/EIR was not listed in the bibliography and thus could not be verified.

Section C.7.c. Fossil Fuels

Comment: [page 078] Some of the impacts caused by increased use of fossil fuels could be mitigated by undertaking actions completely unassociated with water such as constructing a mass transit system so that fewer pollutants are produced. This may be beyond the scope of this DEIR. (USDOI)

Reply: Comment noted; construction of a mass transit system is beyond the scope of this EIR.

Section C.8. Recreation

Comment: [page 079] Put Chapter VI recreation tables, Chapter VII salinity tables and graphs, Chapter XIII salinity graphs, and Chapter XIII habitat analysis tables in the appendices. (DWR)

Reply: Although lengthy, we prefer to leave these tables and graphs in the body of the text because the information contained in them directly support the analysis and conclusions in the text.

Comment: [page 079] There is no discussion of the impacts of any of the alternatives on recreational uses of wetlands and waterfowl habitat, including recreational hunting and bird watching. (BSWA)

Reply: We do not anticipate any significant impacts to the recreational uses of wetlands and waterfowl habitat. A discussion of this assessment has been added to the text in Chapter VI.

Section C.8.a. Reservoirs

Comment: [page 079] The DEIR only discusses the environmental impacts to reservoir recreation and mitigation measures in a programmatic fashion. There is no economic analysis of the recreation impacts or mitigation measures. Some of the mitigation measures proposed may not be available at some reservoirs. (SJRG, TID&MID)

Reply: An analysis of the impacts to recreation was performed for each of the major reservoirs. The analysis used the hydrologic modeling for each alternative to determine the frequency with which changes in reservoir storage would affect opportunities for water-related recreational activities. The DEIR points out that significant impacts to recreation may occur at certain reservoirs under each alternative. CEQA does not require an analysis of economic impacts unless they cause secondary environmental impacts. The DEIR suggests that modification or relocation of facilities, such as extending boat ramps and temporarily moving marinas to accommodate lower water levels, would help to reduce the impact to recreation at reservoirs that are adversely affected. These modifications and relocations would occur within the areas of the reservoirs that are currently inundated under normal operation. Therefore, no significant impacts are likely to result from these measures.

Comment: [page 079] Extreme drawdowns of reservoirs over multiple years would likely have a compounding effect on concessionaire operations due to the cumulative economic impact of reduced visitation, as well as significant reduced public opportunities for recreation. (EBMUD)

Reply: Comment noted. CEQA does not require an analysis of economic impacts unless they cause secondary environmental impacts.

Comment: [page 079] Recreational use at Pardee and Camanche Reservoirs is substantial, with millions of visitors in the past few years. Lowered reservoir elevations would substantially decrease opportunities for public recreational use, as occurred at Pardee and Camanche during past drought periods. Extreme drawdowns would force the closure of marinas and boat launch ramps, resulting in a loss of boat access and increased safety hazards. These conditions would, in turn, reduce visitor use levels, as well as revenues from recreational use which are necessary for facility maintenance, ultimately resulting in reduced opportunities for public recreation. (EBMUD)

Reply: The DEIR points out in several places that implementation of the flow alternatives would result in lower water levels in some reservoirs and that lower water levels could result in reduced recreation opportunities at some reservoirs. Text has been added to this section to further describe the potential adverse impacts to reservoir recreation.

Comment: [page 079] The recreational impacts (VI-79) do not analyze the impacts to the community of Red Bluff if water diversions are curtailed and Lake Red Bluff is not formed during the four months of the summer. This analysis needs to be done and mitigation measures stated. (TCCA)

Reply: The operation of the Red Bluff Diversion Dam would not be affected by the implementation of the Bay/Delta Plan.

Comment: [page 080] The DEIR should state that reduced reservoir levels will reduce visitor days on Whiskeytown Lake and Shasta Lake citing the joint study referred to in the Shasta County Water Agency Phase I Report as supporting evidence. The suggested mitigation, relative to modification or relocation of marinas or boat ramps, incorrectly assumes that facilities constraints are the primary cause of economic disruption relating to lowered reservoir levels. While this can be a factor, even if access facilities are available there is a substantial adverse recreational-use impact based on the reduced public perception of opportunities, as evidenced by the Shasta Lake study. (Shasta CWA)

Reply: The DEIR states that implementation of the flow alternatives would result in lower water levels in some reservoirs and that lower water levels could result in reduced recreation opportunities at some reservoirs. The recreation impact analysis shows that, for the 73-year average, water levels at Shasta Lake do not fall below the various threshold levels with a significantly greater frequency (10%) for any of the alternatives as compared to the base case. Only during the critical period under Alternative 6 would water levels fall below some threshold levels with a significantly greater frequency than the base case. Water levels at Whiskeytown Lake are not expected to change as a result of implementing the flow alternatives.

Public perception of recreational opportunities undoubtedly affects the actual use of some facilities, however, the public perception of the effects of implementing the flow alternatives cannot be accurately predicted. The quantitative analysis that was performed sufficiently addresses the potential impacts to reservoir recreation.

Comment: [page 094] It is inaccurate to suggest that adverse reservoir impacts will be partially offset by increased river recreation opportunities. Not only is the Pardee and Camanche reservoir

recreation usage several orders of magnitude greater than the current or any potential increase in recreational use of the lower Mokelumne River, additional river flows, as proposed by some of the DEIR's proposed alternatives, may well create hazardous recreational conditions along the lower Mokelumne River, thereby resulting in fewer, not greater, recreational opportunities on the river. (EBMUD)

Reply: The suggestion that 'adverse reservoir impacts may be partially offset by increased river recreation opportunities' is not included in this chapter. The reference was made in Chapter III in the discussion of recreation in the Central Valley (Section III.A.3). It is inappropriate to characterize the change in recreation opportunities as offsetting. The statement made in Chapter III has been deleted.

Section C.10. Cultural Resources

Comment: [page 103 - 114] The cultural resources section is lengthy, but it does not answer the basic questions whether there are impacts and their level of significance. In our view, there are no cultural impacts associated with SWP operations resulting from implementation of the 1995 Bay/Delta Plan. We suggest other water project operators will have the same conclusion with regards to their own projects. We would reduce this section considerably and conclude there are no significant cultural resources impacts. (DWR)

Reply: Comment noted. The discussion of impacts to cultural resources has been revised. The discussion points out that implementation of the flow alternatives may have the potential to result in impacts to cultural resources through the changes in operation of reservoirs. These impacts would be similar to those that occur under current operations; however, the frequency, duration, and extent of drawdowns may be greater at some reservoirs under the various alternatives. The level of significance of these impacts is dependant upon the cultural resources located within the zone of fluctuation in the reservoirs, and these are not well known.

Section C.11. Ground Water Resources

Comment: [page 115] The actual costs and possible environmental impacts of groundwater dependence are at this time unknown, because the idea of conjunctive use is relatively new and untested. A complete understanding of groundwater hydrology has not been developed. There are a great many unanswered questions about subsidence, groundwater recharge, and water quality. These questions along with legal issues that are unresolved with respect to area of origin, ownership issues for the co-mingling of water in recharged basins, and vague definitions of reasonable use and safe yields that leave localities with little or no protections from possible abuses of the system make this dependence an unreasonable risk to the future environmental and economic integrity of the north State. The continued reliance on conjunctive use as the panacea for California's water problems by all agencies involved in the restoration of the environmental integrity of the Bay/Delta is at best pre-mature. The condition and extent of groundwater supplies is at this time an unknown. The current local focus of most northern California counties to monitor and document groundwater supplies and quality will serve as a guidepost for future decisions regarding the use of groundwater as a supplement to surface water supplies and should be allowed to be completed before any conjunctive use plans are implemented. It is imperative that the DEIR address the scientific uncertainties of conjunctive use plans to give the reader a more accurate picture of the implications of implementing these plans. (FWA)

Reply: The comment understates the level of knowledge and understanding regarding groundwater. The science of groundwater hydrology is very well developed. There is a great deal of knowledge on subsidence, groundwater recharge, water quality and extent of the resource. Conjunctive use has proven effective in many areas to eliminate or lessen water shortages resulting from a single source reliance.

This document recognizes the potential of conjunctive use projects to ease the impact of delivery reductions. This document does not endorse or propose any particular conjunctive use program as a component of implementing the 1995 Bay/Delta Plan. Thus, a more detailed discussion of conjunctive use is not warranted.

Comment: [page 115] The DEIR fails to adequately address the cumulative impacts of subsidence, overdraft, decreased water quality and decreased agricultural productivity that will occur if groundwater pumping replaces curtailed surface water diversions under Flow Alternatives 3 and 4. The DEIR does not describe the cumulative impacts from these conditions and the known interrelationship between groundwater overdraft and land uses, agricultural production and irreversible changes in the environment. Instead, in Chapter XII, section A.1, the DEIR describes other projects which might be impacted by these alternatives.

The treatment of groundwater pumping related cumulative impacts in the DEIR does not meet the standard required by law in the case of Kings County Farm Bureau v. City of Hanford (1990). Quoting the CEQA Guidelines section 15355, the court required that the EIR reasonably describe the magnifying or cumulative effects of the project alone upon the environment, and not simply whether other projects or acts would cause a magnifying effect with the projects. Further, an EIR has been prepared that examines the impacts which would be cumulatively caused by increased groundwater pumping in the San Joaquin Valley in the area of Mendota and the Mendota Pool. (BWGWD)

Reply: Cumulative impacts are defined in the CEQA Guidelines as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The DEIR recognizes that these individual effects may be changes resulting from a single project. The DEIR is clear on the relationship between overdraft and subsidence, and between decreased water quality and decreased agricultural production. Beyond that, the groundwater resources impacts do not have a magnifying or cumulative effect when taken together. Subsidence does not result in decreased water quality or more overdraft. Likewise, decreased water quality does not contribute to more overdraft.

The cumulative impacts chapter in the EIR cited in the comment (Conveyance of Nonproject Groundwater from the Mendota Pool Area Using the California Aqueduct) does not identify a magnifying or cumulative effect from the groundwater resources impacts. Rather, the environmental effects of the Mendota Pool project are considered cumulatively with the effects of other groundwater pumping projects in the area. Why the comment cites this EIR as containing a description of "the magnifying or cumulate effects of the project alone upon the environment" is not clear.

Regarding irreversible changes to the environment, these impacts are addressed in Chapter XII on page XII-40. The irreversible impacts of the project are identified as accelerated agricultural land retirement, increased fossil fuel combustion, and land subsidence.

Comment: [page 116] Impacts to the water supply are likely to result in increased groundwater use. Increased groundwater use can adversely affect groundwater overdraft, land subsidence, and

groundwater quality degradation and, as a result, agricultural production. These impacts can be mitigated by restricting groundwater pumping; however, pumping restrictions can further affect agricultural production. (TCWA)

Reply: The comment is noted. These issues are discussed in Chapter VI, section C.11.

Comment: [page 116-125] The document is internally inconsistent. The discussion of the alleged benefit of pumping saline groundwater on page VI-117 is never linked to issues about water quality or soil salinity that are discussed on pages VI-124. Chapter VIII, with its proposal for field storage of tile water for managing salinity, never considers the impact of increasing salt load by reliance on groundwater pumping or of increasing the total salinity load through groundwater pumping for salinity management. All of these fragmented sections of the DEIR and Supplement need to be organized and made consistent before issuance of the FEIR, and the irreconcilable nature of many of the statements must be addressed. Failure to do so means that multiple inconsistent impacts to lands within our area have not been addressed. (SLDMWA-2)

Reply: The document adequately discusses the problems with decreased agricultural productivity from irrigating with groundwater. However, to better cross-reference this information, the text will be amended to mention this discussion in connection with the subsidence section as suggested.

Regarding the comment on Chapter VIII, replacing surface water supplies with more saline groundwater in the problem drainage areas could increase the salinity load in tile drain water particularly over the short-term. However, other outcomes are likely in the long-term. For example, additional groundwater pumping could be beneficial in lowering water levels and stabilizing the water table at a lower elevation resulting in less drainage water produced. Increased reliance on groundwater also decreases the total salt load in the basin in that additional salt is not imported with the surface water supply.

Comment: [page 116R] The DEIR should address local impacts of groundwater pumping. Consider the cumulative impact of trucking water to approximately 7,000 residents of the City of Mendota. The DEIR in the current proceeding should give SWRCB decision-makers a clear picture of such impacts at local levels, instead of broad generalizations. (BWGWD)

Reply: The scope of the groundwater impact analysis is appropriate for the project. Analyzing local impacts at the level suggested in the comment is not reasonable and not required by CEQA.

Comment: [page 116R] Discussion on subsidence, overdraft, and export areas (groundwater overlap) should be consolidated for clarity of the reader. We believe that the mitigation measures associated with these impacts are identical and the responsibility for mitigation rests with the agency carrying out the groundwater extraction. (DWR)

Reply: The organization of Chapter VI is based on geography. Thus, the chapter is divided into sections on the Delta region, upstream areas and export areas. Regarding groundwater impacts, this organization is not ideal because one of the major areas of impact for subsidence and groundwater overdraft, the westside of the San Joaquin Valley, crosses this "geographic boundary." Nonetheless, the overall organization of Chapter VI is effective and will not be changed.

The comment regarding mitigation measures is noted.

Comment: [page 116R] The DEIR inadequately identifies mitigation for significant impacts to water supply. Proposed mitigation such as groundwater pumping, water transfers, joint points of diversion in the Delta, and water conservation are either not feasible due to regulatory and/or economic constraints or else they have significant economic and environmental effects. Out-of-Valley drainage is not identified as a mitigation measure. (SLDMWA-2)

Reply: This comment confuses assumptions made in order to evaluate impacts with mitigation proposals. Groundwater pumping is not proposed as a mitigation measure to offset reduced deliveries. Groundwater pumping was assumed to replace curtailed surface water deliveries to evaluate a worst case impact to groundwater resources. Agricultural users in fact may be faced with reduced surface water supplies, limited or no groundwater resources and no transferable water as a result of implementing the flow alternatives.

CEQA does not require that mitigation measures for water supply impacts be identified unless they cause environmental impacts. The surface water delivery reductions, which range from 6 to 14 percent of base case deliveries for the San Luis and Delta Mendota Canal CVP contractors, and the associated economic impacts are unlikely to cause significant impacts to local economies and land uses. The economic impacts of delivery reductions with and without replacement groundwater are discussed in Chapter XI.

The joint point of diversion is not appropriate as a mitigation measure because whether the joint point of diversion will increase exports depends on how it is implemented. Out-of-valley drainage disposal is discussed in Chapter VIII as a salinity control measure. It is unclear, from this comment, how out-of-valley drainage disposal would mitigate for water supply impacts.

Comment: [page 117] The DEIR concludes that delivery reductions on the west side of the San Joaquin Valley may improve agricultural drainage problems in most years. No data or information is provided to support this statement.

This conclusion appears to be based on a recommendation of the San Joaquin Valley Drainage Studies Program that groundwater pumping in certain areas could lower the water table and reduce drainage problems due to perched groundwater. The SJVDP did not consider groundwater quality when it developed this recommendation. Further, the SJVDP plan calls for pumping 24,000 af from the Grasslands and Westlands area. Usable groundwater is unavailable in those quantities in those areas. Saline groundwater would have to be blended with less saline supplies, decreasing the available surface supply. Blending groundwater with surface supplies would result in less surface water in which to recirculate subsurface drainage water. (SLDMWA, WWD)

Reply: The FEIR has been reworded to state that delivery reductions on the west side of the San Joaquin Valley caused by implementation of the flow objectives may help meet the SJVDP recommendations, but increase subsidence problems in drought years. A shift to groundwater supplies in place of imported surface water supplies could help control drainage problems by stabilizing the water table at an elevation below crop root zones.

The groundwater pumping strategy is one of several proposed by the San Joaquin Valley Drainage Studies Programs for reducing the production of agricultural drain water. (SWRCB Exhibit 147). The 1990 SJVDSP report identified significant portions of the problem drainage area as underlain by groundwater with less than 1,250 TDS. Groundwater of this quality is suitable for agricultural uses. If this strategy was successful, less drainage water would be produced, requiring less surface water for the drainage recirculation management tool.

Comment: [page 117R] Last paragraph: The DFG concurs with the water quality benefit opportunities associated with land retirement acres in the Grasslands, Westlands, and Tulare sub-areas as part of the San Joaquin Valley Drainage Program (SJVDP) report. The actual acreage retired should be a function of monitored attainment of objectives rather than an acreage target. This action will address issues in the San Joaquin Valley related to subsidence, agricultural drainage and salinity. (DFG)

Reply: Comment noted.

Comment: [page 118] The proposed mitigation for the impacts to groundwater resources is inadequate for the following reasons:

1. The proposed mitigation is outside the jurisdiction of the SWRCB to implement. Thus, the mitigation is speculative.
2. The proposed mitigation will have environmental effects. The effects of the mitigation must be evaluated.
3. The proposed mitigation is not feasible.
4. The proposed mitigation will not work.
5. The DEIR fails to mention regulation of groundwater by counties pursuant to their police powers as a mitigation measure.

(BSWA, Butte Co., DWR, FWUA, SJRG, SLDMWA, Shasta CWA, SEWD, Stockton, SCBLOC, TCCA, USDOI)

Reply: Response to 1: The comments are correct that much of the proposed mitigation is beyond the authority of the SWRCB to implement. Impacts to groundwater resources would only occur, however, if a water users response to reduced water supplies was to increase groundwater pumping. This is an action by the water user, not by the SWRCB. Nevertheless, the EIR lists actions, including groundwater pumping, that a water user might take in response to reduced surface supplies and suggests mitigation measures that could be taken by the party causing the impact. Every mitigation measure proposed in the DEIR has been implemented in the past or is being implemented now in response to water shortages. Thus, these mitigation measures are not speculative, even though they will not be implemented by the SWRCB.

Response to 2: Mitigation measures proposed in the groundwater impacts analysis section include regulatory limits on groundwater pumping, land retirement, conservation, water transfers, local groundwater management, conjunctive use programs, blending surface water and groundwater, and crop shifting to more salt tolerant crops.

Of these measures, the only one likely to have adverse environmental impacts is water transfers. Water transfers can incur third party impacts, economic impacts, and impacts to legal users of surface water and groundwater. Environmental impacts to fish and aquatic resources also can occur, especially if water is transferred across the Delta using the State and federal export facilities. In most cases, the environmental impacts resulting from a specific water transfer will be addressed in an environmental document analyzing the proposed transfer.

Response to 3: Insofar as all of the proposed mitigation measures have been implemented in the study area in the past, the measures are feasible. Whether the measures are likely to be implemented in any particular area depends on the resources, circumstances and the conditions in that particular area.

Response to 4: Several of the comments charge that the proposed measures will not be effective in mitigating the adverse impacts to groundwater resources from subsidence, overdraft and reduced agricultural productivity. Regarding the proposed mitigation for subsidence impacts, the comments claim that: (1) regulatory limits on groundwater pumping are extreme and ignore development of local groundwater management plans; (2) land retirement is not realistic and will not reduce demand in water-short areas like Westlands Water District and the Grasslands Basin; (3) water use efficiency is already very high in these and other areas so conservation will not accomplish much; and (4) the usefulness of water transfers is limited. One comment also points out that the proposed mitigation does not alleviate the need for additional water supplies.

The purpose of the proposed mitigation is not necessarily to alleviate the need for additional water supplies but to mitigate overdraft, subsidence and other problems. In fact, the only proposed mitigation that addresses alternative water supplies is water transfers. Although water transfers can be complex, many successful transfers to areas of land subsidence in the San Joaquin Valley have occurred in the past. Judging water transfers as limited in use is premature at this time.

Actions toward State regulatory control of groundwater pumping would not proceed before attempts at local management had proved fruitless. If local groundwater management plans effectively deal with subsidence problems, regulatory intervention by the State is unlikely to occur.

Land retirement in a chronically water short area may not reduce the demand for surface water, however, the same cannot be said about the demand for groundwater. Unlike surface water use, groundwater use is not limited by contracts nor is it coordinated among pumpers in a district. If land is retired, the surface water allotment for that land likely will be used elsewhere in the District resulting in no net demand change for surface water. However, ceasing to use groundwater on retired land won't necessarily mean an increase in groundwater use elsewhere. Thus, the demand for groundwater likely will be reduced with land retirement.

If an area already is using water efficiently, increasing that efficiency may not significantly reduce demand for groundwater pumping. Thus, as the comment suggests, in high efficiency areas, this mitigation measure may not be effective.

The comments charge that the mitigation measures for decreased agricultural productivity are completely inconsistent and inadequate. Blending groundwater supplies requires surface water that may not be available. Crop shifting will not offset decreased productivity because of the lower income from salt tolerant crops. Water transfers and increased conservation require a shift to high value crops to recover the investment.

The success of blending surface water and groundwater to prevent inhibited plant growth depends on the volume of surface water available and the salinity of the local groundwater. This may not be a viable mitigation measure if surface water is unavailable and groundwater salinity is exceptionally high. However, if groundwater is needed to bring a crop to maturity, blending groundwater with available surface water supplies may ensure better productivity than irrigating with more saline groundwater after surface supplies have been exhausted. Crop shifting, water transfers and conservation measures may make farming less profitable. However, these measures are not intended to target profitability. The purpose of the proposed measures is to mitigate for inhibited plant growth from irrigating with saline groundwater, whether or not the plant is a high value or low value crop.

Regarding local groundwater management, several comments state that this measure does not mitigate the adverse impacts on the resource. One comment explains that groundwater management plans have no feasible methods for controlling or reducing groundwater pumping. Groundwater

management plans adopted pursuant to Water Code section 10753 et seq. may include components to mitigate conditions of overdraft (section 10753.7(e)), replenish groundwater extracted by users (section 10753.7(f)) and facilitate conjunctive use programs (section 10753.7(h)). Further, if groundwater replenishment programs or other alternative sources of water supply have proven through study and investigation to be inefficient or infeasible to lessen the demand for groundwater supply, local agencies are not prohibited by statute from limiting or suspending extractions of groundwater (section 10753.8(c)). In addition, groundwater management agencies created by statute may be empowered with the means, such as pump taxes, to indirectly limit groundwater extractions.

Response to 5: The comment is correct regarding the police powers of the counties to regulate groundwater. The EIR will be amended to include this as a mitigation measure for the groundwater impacts.

Section C.11.a. Land Subsidence

Comment: [page 115] "The area of concern for subsidence in the Sacramento Valley" is noted as "Yolo County between the towns of Davis and Zamora" (page VI-115). The Plan should not ignore the potential of land subsidence in Tehama County and in northern Glenn County if diversions are curtailed and groundwater pumping increase. "Contracts for surface supplies to replace the lost supplies" (page VI-116) to mitigate the impacts will not be realized even if the supplies were available because diversions to the affected area will be curtailed. The Tehama-Colusa Canal and the Corning Canal serve areas in Tehama and Glenn counties which could be adversely affected by land subsidence. There is, with this Plan, the potential of turning the Sacramento Valley into another San Joaquin Valley with land subsidence and drainage problems. (TCCA)

Reply: If subsidence has not yet occurred in the Tehama and Northern Glenn Counties area in the past, it is unlikely to occur as a result of implementing the 1995 Bay/Delta Plan. Estimates by DWR show that the perennial yield of the Sacramento Basin is such that an additional 400 TAF could be developed above the pre-1987-1992 drought demand. Further, groundwater levels have recovered to pre-drought levels throughout most of the Sacramento Valley.

The consumptive use of all direct diverters in the Sacramento Basin without contracts for supplemental water was calculated to be 107 TAF (DEIR page A3-16). If this demand were transferred from surface water to groundwater, the increased groundwater pumping would be unlikely to lower groundwater levels below historic low levels in the Sacramento Basin. Thus, subsidence in the Sacramento Valley is unlikely to occur as a result of implementing the flow alternatives. For a complete discussion of the subsidence analysis, please see Chapter VI, section C.11.

Comment: [page 115] The DEIR, section VI-115 states "The area of concern for subsidence in the Sacramento Valley is Yolo County between the towns of Davis and Zamora". The City of Woodland is in this area and consequently is concerned about the subsidence potential associated with groundwater extractions. Flood control levees that protect Woodland are also in the area of known subsidence. (Woodland)

Reply: Comment noted.

Comment: [page 115] Page VI-115 recognizes the "area of concern for subsidence in the Sacramento Valley is in Yolo County," yet does not recognize Yolo County as a groundwater

overdraft area on page VI-118. Subsidence is a result of groundwater overdraft and Yolo County should be indicated as such. (TCCA)

Reply: Yolo County is not recognized as an area with a groundwater overdraft problem. Bulletin 160-93 estimated the perennial yield of Yolo County to be 340 TAF and the extraction to be 338 TAF at the 1990 level of development. Bulletin 160-98 indicated that increases in overdraft in the Sacramento River Region through 2020 are expected in Sacramento, Placer and El Dorado Counties, but not Yolo County.

Subsidence is a problem in Yolo County, but the phenomenon is associated with short term lowering of water levels during droughts rather than long-term lowering due to overdraft. The draft CVPIA PEIS indicates that, with the exception of Sacramento and San Joaquin Counties, in all other areas of the Sacramento Valley basin, the winter rains of 1992-93 resulted in near full recovery of groundwater levels to pre-drought conditions.

Comment: [page 116R] Increased groundwater pumping can induce subsidence, which can affect the structural integrity of public works. (BWGWD)

Reply: On page VI-116, the DEIR recognizes that subsidence can change canal gradients, damage buildings and require repair of other structures. However, identifying individual structures throughout the study area that have been or could be damaged by subsidence is beyond the scope of this document.

Comment: [page 116R] The statement about subsidence infers that subsidence is rather instantaneous, and stops as soon as pumping during droughts stops. However, compaction recorder records indicate that all of the subsidence doesn't occur just when the pumping is occurring (i.e. there is a significant lag time). Also, there presently is a concern about subsidence in some areas that are outside of the ones that were delineated by the U.S. Geological Survey several decades ago. This is because of the drilling of new wells and pumping of confined groundwater in other areas during the past decade or two. Examples are north of Los Banos in and near the Central California Irrigation District, and at some locations of concentrated wells pumping into the Delta-Mendota Canal. (SJRECWA-1A)

Reply: The comment is correct regarding the timing of subsidence. The DEIR did not intend to imply otherwise. The additional information in the comment is noted.

Comment: [page 117] When has the SWRCB used its authority under Article X, Section 2 of the State Constitution to stop the unreasonable method of diversion of groundwater? (Butte Co., SJRG)

Reply: This is not a comment addressing the environmental effects of the project. The SWRCB has authority to regulate diversions of groundwater if the method of diversion is unreasonable. Information on past SWRCB actions addressing groundwater can be gathered by reviewing the SWRCB's decisions electronically through an electronic legal research service or on paper at the SWRCB's offices. Including a list of SWRCB actions on this topic in the response to comments is inappropriate because it does not address environmental impacts of the project.

Comment: [page 117] The SWRCB does not have authority to require land retirement to reduce demand to mitigate subsidence problems. (SCBLOC, TCCA)

Reply: The SWRCB has authority to curtail waste and unreasonable use of water. Application of this authority may result in land retirement.

Comment: [page 117] "Limits on groundwater pumping. The SWRCB has authority to prohibit water diversion if the method of diversion is unreasonable pursuant to Article X, section 2 of the California Constitution. This authority could be used to limit groundwater pumping to keep water levels above the threshold levels where subsidence begins." Article X, section 2 only refers to surface water and not to groundwater. Is the SWRCB expanding the meaning of this? (SCBLOC)

Reply: Article X, section 2 applies to the use of all water in the state.

Comment: [page 117] It should be mentioned somewhere in the EIR that the subsidence impacts are essentially irreversible. During the recent drought, subsidence in local areas was exacerbated by pumping from many concentrated wells into canals or other water bodies, as part of water transfer or exchange programs. (SJRECWA-1A)

Reply: This issue is discussed in Chapter XII, Section E entitled "Irreversible or Irretrievable Commitment of Resources."

Section C.11.b. Ground Water Overdraft

Comment: [page 118] A map with the counties and the groundwater basins would be helpful to this discussion. (USDOI)

Reply: A map has been added as the comment suggests.

Comment: [page 118] The comment that groundwater overdraft occurs throughout the San Joaquin River and Tulare Basins is technically incorrect and misleading. Careful examination of hundreds of water-level hydrographs for wells in the valley indicates a very different conclusion. The greatest overdraft is generally in undistricted areas with no surface water supplies and in districts with inadequate surface water supplies. Recently, overdraft has also resumed in some areas which have had their surface water supplies curtailed. Water-level hydrographs indicate that there was no overdraft in significant parts of both basins before surface water supplies were curtailed. Also, in some areas, such as much of the west side, water levels in some strata have been rising over the long term. This proposed project has the potential not only to worsen overdraft, but to create overdraft in areas where overdraft wasn't previously occurring. (SJRECWA-1A)

Reply: The intended meaning of the statement in question was not that the entire San Joaquin River and Tulare Basins are overdrafted. The text will be revised to clarify the meaning of the statement. The comment is correct that overdraft occurs in certain sub-basins, generally where surface water supplies are unavailable or inadequate to meet demand. This is consistent with the text of the DEIR which discusses individually the sub-basins which are overdrafted in the San Joaquin Valley.

Comment: [page 119] There is no factual basis for the assumption that groundwater is available to replace curtailed surface water diversions in the Sacramento and San Joaquin Valleys. In fact, in many parts of the San Joaquin Valley, additional groundwater resources are not available for development.

By assuming that groundwater is available, the DEIR underestimates the adverse impacts on local groundwater resources. Specifically, the description and evaluation of impacts in the Sacramento Valley is sparse and inadequately supported. Further, the DEIR does not recognize the financial, economic, or social impacts of replacing surface water with groundwater. Such impacts include higher costs of pumping and delivering groundwater, land fallowing where groundwater is unavailable, and reduced recharge to the groundwater basins from imported surface water. (BSWA, Butte Co., CWD, USDOI, DWR, GCID, PCWA, Shasta CWA, SFPUC, SJRG, SLDMWA, SVRA, SVWA)

Reply: A water right holder has several options to replace a water supply if that supply is reduced, and all water users are not likely to choose the same option. Indeed, as the comment points out, some choices may not be available in certain areas. Choices will be based on individual resources, needs, locations and other factors. Predicting these choices is speculative. Nonetheless, to determine the impacts to groundwater resources from implementing the flow alternatives, assumptions had to be made regarding what water users would do if their surface water supplies were reduced as a result of implementing the flow alternatives. The general approach used in formulating assumptions for impact analysis was to use the assumption that would produce the worst case environmental outcome of an alternative. For the groundwater impact analysis, surface water supply reductions were assumed replaced by groundwater pumping to effect the greatest impact to groundwater resources. This approach is the most reasonable way to discharge the SWRCB's CEQA obligations.

This assumption was not meant to imply that groundwater pumping is the ultimate solution to reduced surface water supplies. Several of the comments in this group mistakenly interpret this assumption as implying that groundwater is available to replace reduced surface water supply and that no impacts would result. This is not the case.

Many of the comments criticized the DEIR for not evaluating groundwater impacts in the Sacramento Valley. With the exception of Sacramento County (overdraft) and the Davis-Zamora area (subsidence), the Sacramento Valley was not discussed because adverse impacts from pumping groundwater are not anticipated. The DWR estimated the perennial yield of the Sacramento Basin aquifer to be 2400 TAF and the pre-1987-1992 drought groundwater demand to be 2000 TAF (USBR, 1997g, p. II-7). Although water levels declined during the 1987-1992 drought, near full recovery to pre-drought conditions occurred in the Sacramento Valley following the winter of 1992-1993. (USBR, 1997g, p. II-10)

The perennial yield, pre-drought demand values, and water level recovery information indicate that additional development of groundwater resources can occur without causing widespread overdraft and related problems. The consumptive use of all direct diverters in the Sacramento Basin without contracts for supplemental water was calculated to be 107 TAF (DEIR page A3-16). If this demand were transferred from surface water to groundwater, the increased groundwater pumping most likely would not bring about widespread overdraft in the Sacramento Basin.

The economic and financial impacts of increased groundwater pumping are evaluated in Chapter XI. Economic impacts were modeled for two scenarios; one in which groundwater was available to replace surface water supplies, and another in which groundwater was not available. However, because the economic impacts were evaluated in Chapter XI and the overdraft, subsidence and other

impacts were evaluated in Chapter VI, the reader may have missed the discussion of economic impacts.

Land use changes are discussed in the DEIR in Chapter VI. The fallowing of farmland was considered to be a less likely response to surface water reductions than contracting for alternate supplies or pumping groundwater. Very large areas of the Central Valley are being economically farmed using water supply contracts or pumped groundwater. These areas have extensive agricultural infrastructure, good soil, and excellent climate. Based on these considerations, assuming that these lands will stay in production in the event of reduced surface water supply is reasonable. If there are areas where groundwater and contract water are not available, land fallowing may occur, but areas such as this most likely are not widespread.

Reduced recharge to the groundwater basins from reduced application of surface water is a factor not mentioned in the DEIR. The text will be amended to include this factor.

Comment: [page 120] The DEIR fails to acknowledge the current condition of the groundwater basin in the TID/MID service area and fails to fully disclose the impacts of implementation of the 1995 Bay/Delta Plan on the groundwater basin. The Turlock basin is not capable of sustaining increased groundwater withdrawals to meet new demands. While the DEIR states that implementation of Alternative 5 could worsen the overdraft in the Modesto and Turlock groundwater basins, the SWRCB seriously underestimated the surface and groundwater impacts and the ability of the districts to sustain the level of pumping contemplated in the DEIR. In addition to the overdraft within the Turlock basin from pumping to the east of and outside the district, the DEIR did not consider the significant private agricultural pumping and the municipal and domestic demands on both the Modesto and Turlock basins. (TID&MID)

Reply: The DEIR acknowledges the current condition of overdraft in the groundwater basins in the TID/MID service area and does not suggest that the Turlock Basin is capable of sustaining increased groundwater withdrawals to meet new demands. The DEIR states that overdraft in the Turlock and Modesto basins will worsen if groundwater pumping increases to replace curtailed surface water diversions. That the basin is unable to sustain increased groundwater withdrawals is inherent in the designation of the basin as overdrafted. The DEIR did not suggest that the groundwater basins were capable of sustaining the pumping needed to replace reduced surface water supplies on a long-term basis.

The additional information provided in this comment letter on groundwater level declines and the salt balance problem is noted. This information essentially supports the conclusions in the DEIR.

The last part of the comment charges that the DEIR did not consider the significant private agricultural pumping and municipal and domestic demands on the two basins. Surface water curtailments due to implementation of Alternative 5 will not affect the private agricultural groundwater pumpers or the municipal and domestic users in the Modesto and Turlock basins unless these users get some portion of their supply from the districts. In this case, the use is accounted for in the surface supply reductions assigned to the districts.

Section C.11.b.1. Sacramento River Basin

Comment: [page 119] The DEIR inaccurately suggests that Sacramento County overdraft conditions represent the entire Sacramento River Basin. (Shasta CWA)

Reply: The overdraft conditions in Sacramento County are not representative of the rest of the Sacramento Basin and the DEIR is clear on this point. On page VI-119 the DEIR states that in the Sacramento River Basin, groundwater overdraft is reported in Sacramento County at a level of 33 TAF (per year). The DEIR goes on to state that Sacramento County is the only area in the Sacramento River Basin with a groundwater overdraft problem.

Comment: [page 119] Butte County in the Sacramento River Basin also has a groundwater overdraft problem (page VI-119) which should be addressed. An increase in water transfers can create a new groundwater problem in another basin while mitigating the problem in the overdraft area (page VI-122), simply shifting the impacts to another area. (TCCA)

Reply: DWR Bulletin 160-93 indicates that Butte County has no overdraft problem. DWR Bulletin 160-98 indicates that increases in overdraft in the Sacramento River Region through 2020 are expected in Sacramento, Placer and El Dorado Counties. Butte County is not mentioned. Volume 2 of the CVPIA Draft PEIS states that during the 1987-92 drought, groundwater levels declined in Butte County. However, the above normal precipitation during the winter of 1992-93 resulted in near full recovery of groundwater levels to pre-drought conditions.

Regarding the second part of this comment, transferring groundwater out of an area could create or add to an overdraft problem. However, counties and local agencies have some authority to regulate transfers to prevent such problems from developing.

Comment: [page 119] The DEIR states that Sacramento County is the only area in the Sacramento River Basin with a groundwater overdraft problem. This is incorrect as parts of Sacramento County and Placer County rely on the overdrafted North American River Groundwater Basin to a considerable extent. The DEIR also states that surface water delivery reductions are not expected in this area as a result of implementing the flow objectives, thus, the overdraft problem should not worsen. However, PCWA will experience diversion curtailments under Flow Alternatives 3 and 4. These diversion curtailments could have a negative effect on groundwater management and conjunctive use plans because the Sacramento Area Water Forum's groundwater stabilization project for this area envisions Placer County surface water as an integral and important part of overall regional water management. (PCWA-1)

Reply: More recent information provided in DWR Bulletin 160-98 (v. 1, p. 3-51) supports your comment and indicates that groundwater overdraft is occurring in Sacramento, Placer and El Dorado Counties in the Sacramento River Region. If the Sacramento Area Water Forum is relying on PCWA's American River water rights to alleviate groundwater overdraft in the future, implementation of Alternatives 3 and 4 may reduce the supply available under PCWA's water rights for conjunctive use. However, curtailing PCWA's diversions under Flow Alternatives 3 and 4 is unlikely to worsen groundwater overdraft because, as a CVP contractor, PCWA has options other than pumping groundwater to replace curtailed surface water diversions.

Section C.11.b.2. San Joaquin River Basin

Comment: [page 119] Replace "could" with "would" since groundwater overdraft in the Central Valley will definitely occur if water deliveries are reduced. (SJRECWA-1A)

Reply: Revision made to text.

Comment: [page 120] From the technical standpoint, it's hard to believe that a project would be seriously proposed that would increase overdraft in the Madera Basin, given the existing situation. (SJRECWA-1A)

Reply: Your comment is noted.

Comment: [page 120] The DEIR should discuss the interrelationship between the Modesto basin and the Eastern San Joaquin County Groundwater basin, and the impact that actions in one basin have on another. (SEWD)

Reply: The DWR subdivided the San Joaquin Basin into 15 sub-basins largely based on political considerations for the purpose of groundwater management. Adjacent sub-basins are hydrologically interconnected. The boundary between the Eastern San Joaquin County Groundwater basin and the Modesto basin is the Stanislaus River. These two sub-basins are interconnected and actions in one basin can impact conditions in the other basin.

Comment: [page 121R] On Page VI-121 the statement is made that "no surface water delivery reductions were identified for the Merced Irrigation District, thus, the alternatives are not expected to impact groundwater overdraft in this basin." (This statement is the same in both the original and the revised Chapter VI). A review of the results of the Alternative 8 study reveals a Merced ID diversion shortage of 36 TAF in September 1977 and 7 TAF in October 1977. The statement of no impact on groundwater is made in spite of the assumption in the modeling (for all studies) that Merced ID's annual groundwater pumping is 179 TAF in dry years and 269 TAF in critical years, compared to 31 TAF in wet, above normal and below normal years. There are 11 dry years and 15 critical years in the 73-year study period. Since New Exchequer Dam has been in operation, the average annual groundwater pumping by Merced ID has been 25 to 30 TAF with a maximum of 167 TAF occurring in 1977. Since the assumed groundwater pumping is greater than what has occurred historically, the statement of no expected groundwater overdraft appears questionable. This excessive groundwater supply is also the main reason that the DEIR analysis concluded that there is no impact to Merced ID's surface water diversion. (Merced ID)

Reply: The analysis in the comment is correct regarding the delivery reductions modeled in DWRSIM. Model results for Alternative 8 show a delivery reduction of 43 acre-feet in the fall of 1977 compared to the base case. Being the only delivery reduction in the 73 years of record, this reduction was not great enough to affect the long-term annual average which rounds to zero in Table V-1. Since 1977 is not part of the critical period, the critical period average in Table V-2 also is zero.

If MID's groundwater diversions are less than those assumed in the DWRSIM modeling studies, the modeled impacts for 1977 should have been greater. However, assuming that impacts would have occurred in other years may not be correct because deliveries can also be made from Lake McClure if storage is available. Both Lake McClure storage and groundwater pumping in the district contribute to the relatively low delivery impacts.

The Merced Groundwater Basin is overdrafted by an estimated 28 TAF per year. Modeling results suggest that increased pumping would average less than 1 TAF per year, not a significant increase. The comment suggests that this number is too low. If so, increased reliance on groundwater by the Merced ID may worsen conditions of overdraft in the basin. However, as Merced ID testified at the water rights hearing, water conservation activities can be implemented to reduce the impact.

Comment: [page 122R] We do not understand the discussion of the West Stanislaus Irrigation District as receiving "most of the delivery reductions" under Alternatives 3 and 4. This needs further explanation. Whether or not this is true, the District does not in fact have an option of contracting with the CVP for replacement water because its CVP supplies will be reduced by implementation of the 1995 Bay/Delta Plan and due to institutional restrictions on increasing supplies at the present time. (SLDMWA-2)

Reply: The West Stanislaus Irrigation District is one of a group of water right holders whose direct diversions would be curtailed under the implementation of Alternatives 3 and 4. This group of water right holders is identified in Table VI-75 as "San Joaquin River System Direct Diversions." Of this group, the West Stanislaus Irrigation District would incur most of the delivery reduction. As the DEIR explains, if CVP water is unavailable and groundwater is pumped to replace the curtailed surface water diversions, Alternatives 3 and 4 would have a significant impact on overdraft in the San Joaquin River Valley.

Section C.11.b.4. Ground Water Overdraft Mitigation

Comment: [page 122] With respect to the DEIR identification of water transfers as additional mitigation, the environmental document should more fully identify, analyze and address institutional barriers to increased water transfers, particularly within individual groundwater basins. This is particularly important because the DEIR contains several statements that water rights holders, in the event of curtailed diversions, need merely "seek" CVP water and, by implication, that it will then be made available by virtue of the CVP's water rights.

It has been our recent experience in Shasta County, however, that USBR institutional constraints, together with some actual facility limitations, have made it extremely difficult, and sometimes impossible, to obtain additional CVP water supplies. Districts within Shasta County which have recently tried and failed to obtain more CVP water include the Mountain Gate Community Services District, the Shasta Community Services District, the City of Shasta Lake, Bella Vista Water District, and Centerville Community Services District. Thus, contrary to a significant DEIR assumption, recent dealings with the USBR in Shasta County suggest that additional CVP supplies are unavailable, and will not become available in the foreseeable future, unless the USBR is required by SWRCB permit condition to meet this expectation.

Accordingly, SWRCB, in light of its stated Constitutional authority by virtue of Article 10, Section 2, should substantially augment its discussion and analysis of water transfers as feasible mitigation, and to ensure that the CVP facilities and non-facility barriers to conjunctive use of surface and groundwater through water transfer mechanisms, is imposed as mitigation for an adopted alternative in the event of surface water delivery reductions. (Shasta CWA)

Reply: This comment appears to confuse two separate mechanisms for obtaining alternative water supplies; 1) water transfers, and 2) contracts with the USBR. Issues concerning water transfers and their feasibility are addressed in the first comment on Chapter VI in this report. The issue of availability of new contracts with the USBR is addressed in response to comments on Chapter II, Section E.1.c page 17.

Section C.11.c. Ground Water Quality Deterioration

Comment: [page 122] The comment about loss of usable storage due to groundwater quality degradation should be clarified and expanded upon. (SJRECWA-1A)

Reply: The overdraft figures used in the DEIR were from DWR Bulletin 160-93. In computing groundwater overdraft in the San Joaquin Valley, Bulletin 160-93 explains that groundwater quality degradation is another factor that must be considered when computing overdraft. Groundwater overdraft in a basin may induce the subsurface movement of poor-quality water into higher quality water. The resultant quality degradation may reduce the usable storage of a groundwater basin. This adverse effect of groundwater overdraft was evaluated and included in the groundwater overdraft computations. Bulletin 160-93 did not specify the areas in which this accounting practice was used; however, a reasonable assumption is that it was used in eastern San Joaquin County and in the valley trough area between Merced County and Kern County.

Comment: [page 123] Besides overdrafting in some areas east of the valley trough, increased water deliveries and decreased pumping in some parts of the west side of the valley have been a contributing factor. There is a well developed cone of depression and overdrafting in the Raisin City area. Thus the Fresno and other areas should also be mentioned. (SJRECWA-1A)

Reply: Your comment is noted. This information will be added to the discussion in Chapter VI.

Comment: [page 124] The DEIR recognizes that 70,000 acre-feet per year are needed, on average, to halt saline intrusion into the Eastern San Joaquin County Groundwater Basin. However, the amount needed to reverse the critically overdrafted conditions is 200 to 250 TAF.

The EIR as drafted misleads the reader into believing that 70,000 acre-feet of additional water is all that is required to correct this problem. The failure to properly present the conditions of overdraft in the Eastern San Joaquin County Groundwater Basin makes the EIR inadequate for this purpose. (SJC, Stockton)

Reply: The comment is noted; however, the EIR neither states nor implies that only 70,000 acre-feet of additional water is needed to correct problems in the basin. Alternate supplies equal to the amount of overdraft in a basin would only stabilize water levels, not bring about recovery. Alternate water supplies in excess of the amount of annual overdraft would be needed to reverse the critical overdraft conditions in this basin.

Comment: [page 124R] Increased groundwater pumping impairs water quality in the aquifer and threatens municipal supplies. Almost every town in the San Joaquin Valley depends upon groundwater and all are vulnerable to impaired water quality. For example, pumping up to 75,000 acre-feet annually from a 5,000-acre area immediately adjacent to the City of Mendota brought poor quality water into the city's wells. The TDS increased to the point where the California Department of Health Services directed that a new water supply be developed. (BWGWD)

Reply: The DEIR discusses the impacts to water quality in the San Joaquin Valley if groundwater replaces the reduced surface water supplies caused by implementing the flow alternatives. The area in which Mendota is situated is specifically mentioned in this section. The text will be amended to state that the problem impacts both municipal and agricultural pumpers in the valley trough area.

Section C.11.d. Decreased Agricultural Productivity

Comment: [page 123, 124] The DEIR should note that conservation of surface water supplies may contribute to salt buildup in soils of the Colusa Basin Drain Area. (TCCA)

Reply: Comment noted.

Comment: [page 125R] The DEIR fails to include an analysis of the economic impact or feasibility of the mitigation measures for the impact of decreased agricultural productivity. (WWD-2)

Reply: The mitigation measures for decreased agricultural productivity are typical responses to this impact. To the extent that these measures have been used successfully in the past, they are feasible. However, particular measures may be more appropriate for some locations than others. The economic impact of decreased agricultural productivity from more saline replacement water is insignificant compared to the economic impact of not replacing the water supply. Economic impacts of the delivery reductions without replacement groundwater are evaluated in Chapter XI. These impacts were within the range of recent fluctuations in crop production in the affected areas and were not significant.

Section D.1. EXPORT AREAS, SWP and CVP Export Service Area

Comment: [page 124] The EIR should examine the impacts to recreation, power generation, and scenic values that will occur as a result of the Plan if non-CVP reservoirs are reoperated to meet the needs of the Friant Service Area. (FWUA)

Reply: There is no reason to assume that the reservoirs referred to would provide additional water to the Friant service area contractors in the event that diversions to the Friant-Kern Canal are curtailed under Alternative 5. The assumption is that the Tulare Lake basin reservoirs would be operated much the same as in the past. Therefore, there is no reason to believe that there would be any recreational, scenic, or power generation impacts.

Section D.1.c. Wildlife Habitat

Comment: [page 125] The DEIR recognizes that Delta water exports provide incidental benefits to wildlife through transport, use, and discharge of the water, which would be significantly affected by any reductions in exports. The EIR needs to recognize the significant impacts water recycling projects are having on local wildlife habitat areas in Southern California (MWD)

Reply: Comment noted. Water recycling projects may be having a beneficial impact on Southern California wildlife.

Section D.1.f. Water Reclamation

Comment: [page 126] The DEIR recognizes the significant number of recycling projects already in place in MWD's service area. Changes in the quality and quantity of SWP deliveries to Southern California may result in direct impacts or suspension of these programs, causing proportionally higher

MWD demands for SWP supplies. There also are potential economic ramifications (to industrial, agricultural, and residential consumers) associated with changes in the quality and quantity of MWD's SWP supplies. The FEIR should note that MWD as a whole, and water management projects in particular, are very sensitive to increases in salinity and reductions to SWP water deliveries. (MWD)

Reply: Effects on recycling projects of increased salinity and decreased SWP deliveries are discussed in Appendix 1 (Environmental Report) of the 1995 Bay/Delta Plan. Chapter VIII, Sections D.2. and D.3. of the Environmental Report discuss the potential for recycling in the State, constraints on recycling and reclamation, effects of higher salinity water on recycling/reclamation and dependence on reliable SWP deliveries. The Environmental Report is incorporated by reference into the FEIR.

Comment: [page 127R] This section, dedicated to discussing impacts of delivery reductions in the export area, states that export area delivery reductions could have positive effects. As discussed above, reduced deliveries may in fact increase salt loading if there is groundwater pumping, there is no justification offered for the statement that land fallowing would benefit native species, and we have indicated that groundwater pumping as a benefit for lowering groundwater levels and problem drainage areas is extremely problematic. This whole statement should be stricken from this section. (SLDMWA-2)

Reply: Regarding the comments on salt loading and water table stabilization, please see the response to SLDMA's previous comments on these topics in reference to EIR Chapters VIII, section C and Chapter VI, section C.11.a. Land retirement will benefit native species, however, the comment is correct that land fallowing, a short-term response, will have no lasting benefit to native species. This statement will be deleted from the text.

Section D.2. EBMUD Service Area

Comment: [page 128R] The SWRCB flow alternatives would cause excessive water shortages to EBMUD's customers with the attendant economic impacts caused by such shortages. Thus, the EIR must be revised to acknowledge the significant EBMUD customer and service area impacts of SWRCB Alternatives 3, 4, and 5, and to acknowledge that those impacts are potentially unmitigable. (EBMUD)

Reply: The DEIR discloses water supply impacts to EBMUD in Table V-1 and V-2, and water supply reduction effects on page 132 of Chapter VI. If alternative water supplies are not available, the impacts to EBMUD due to implementation of Alternatives 3, 4 or 5 are potentially unmitigable.

Section D.2.a. Summary of Customer Deficiencies

Comment: [page 127] The DEIR alternatives would result in unreasonable impacts to EBMUD's 1.2 million customers and service area economy in the San Francisco East Bay Area. These customer impacts would occur despite EBMUD's existing and comprehensive conservation and reclamation program and its 25 percent mandatory rationing assumption, and the resulting customer burden, that EBMUD has already built into its long-term water planning. (EBMUD)

Reply: Comment noted.

Comment: [page 130R] In revised Chapter VI, discussing the EBMUD service area, a new sentence has been added at the bottom of the first full paragraph on page VI-130. Referring to the Joint Settlement Agreement approved by EBMUD, the United States Fish and Wildlife Service and the DFG, the revised DEIR Supplement states: "This agreement was implemented through the FERC process . . . ." In fact, while the Joint Settlement Agreement has been fully executed and submitted to the FERC, FERC not yet taken final action on the agreement. Therefore, it is not accurate to say that the agreement has been "implemented" by or through FERC, because FERC has not yet implemented the agreement in any way. The agreement is not yet in effect, and will not be until a final FERC order is issued. It is EBMUD's expectation that FERC will approve the Joint Settlement Agreement flows in the near future, but at this time FERC has yet to take action. The DEIR should be corrected to reflect this fact. (EBMUD-2)

Reply: While it is true that the FERC had not taken final action on the 1997 Joint Settlement Agreement at the time the DEIR was published, the purpose of the text was to point out that EBMUD was, at the time, operating to meet the recommended flows for the Mokelumne River contained in the Agreement, that the Agreement was being used as the base case for assessing impacts that would result from implementing the flow alternatives, that the Agreement was the result of a process separate from the implementation of the 1995 Bay/Delta Plan, and that, therefore, the effects of the Agreement were not being analyzed as part of the DEIR. Ultimately, the FERC has since issued its order approving the Settlement Agreement for the Mokelumne River and amending the license and has denied two requests for rehearing, so the text is correct. However, for clarity, the text will be modified to read "This agreement was initiated and is being implemented through the FERC process; . . ."

Section D.2.b. EBMUD's Response to Increased Flow Requirements

Comment: [page 129] When faced with water supply shortages caused by the SWRCB alternatives, EBMUD does not have the same ability to easily implement conservation measures to alleviate those shortages as would a supplier who has not already implemented a comprehensive conservation and reclamation program. This means that the EIR's conservation "solution" to shortages may, in reality, be no solution at all for EBMUD because it has already implemented such a program. (EBMUD)

Reply: Comment noted.

Comment: [page 130] The discussion of EBMUD supplemental water supply needs to be updated to reflect the release of the EBMUD/USBR Supplemental Water Supply project DEIR/EIS. (CCWD)

Reply: The text has been revised accordingly.

Section E. FRIANT SERVICE AREA

Comment: [page 131] The DEIR provides an inadequate evaluation of the impacts of the Bay/Delta Accord in the Friant service area because it focuses primarily on the impacts of delivery reductions from the San Joaquin River as they relate to the Friant service area. The DEIR does not adequately address anticipated regional impacts from reductions in water diverted from the Bay/Delta, particularly as they relate to the Cross Valley Canal service areas. An adequate analysis would evaluate regional impacts with greater depth and specificity. (CVCC)

Reply: Deliveries to the CVC service area are not included in the base case or the alternatives because they have not been approved by the SWRCB (see footnote 1, page II-14).

Comment: [page 131] As the DEIR notes, reduced water supplies can lead to regional changes in land use by shifting the types of crops grown, short-term fallowing, or long-term retirement of agricultural land. Those regional changes could be particularly dramatic in the Friant service area if water is diverted away from historic users. The DEIR does not attempt to assess those regional impacts because it concludes regional changes are the result of numerous decisions made by individuals, water districts and governmental agencies. However, evaluating the potentially significant regional changes that might be expected as the result of implementing the 1995 Bay/Delta Plan is no more difficult than understanding the interaction between the factors affecting the Bay/Delta Estuary (which the DEIR also notes is difficult).

It is therefore appropriate for the DEIR to address regional changes that might be expected as the result of the implementation of the Alternatives. That regional analysis must take into account the unique cropping, water supply and climatologic circumstances of each region as well as the other factors noted by the DEIR. Moreover, because there is such variability between agricultural regions, all analysis in the DEIR addressing rural impacts must be regional, since a significant impact focused in one region may not be material statewide but could be devastating for the affected region. (FWUA)

Reply: The DEIR assesses the regional impacts to the Friant service area due to reduced water supplies in Chapter VI, Section E. This section points out that delivery reductions are anticipated only under Alternative 5 in the Friant service area. However, under this alternative, there would be significant effects on crop acreages, land use and groundwater levels. The section evaluates these effects and proposes mitigation.

Comment: [page 131] The DEIR contains no analysis of the impacts to urban development within the Friant service area resulting from reduced water supplies in the Friant Division as the result of the implementation of the 1995 Plan. (FWUA)

Reply: The impacts resulting from reduced water supplies in the Friant Division would primarily affect agricultural uses, as analyzed in Chapter VI, Section E of the DEIR. In a previous discussion (Chapter VI, Section D.1.g) on the growth inducing effects in export areas, the DEIR points out that "To the extent that historic patterns indicate future trends, reduced surface water availability is unlikely to affect growth in urban areas."

Comment: [page 131] The DEIR describes several mitigation measures to offset groundwater impacts, losses of surface water supplies and subsidence in the San Joaquin Valley resulting from reduced deliveries associated with the reallocation of water to implement the 1995 Plan. The DEIR states that mitigation measures would include adopting AB 3030 programs, establishing a groundwater management agency, developing conjunctive use programs and conserving water through more efficient use. While those measures may or may not be potential mitigation measures for other regions, they are not a potential mitigation measure for the Friant Division. Statements in the DEIR that the impacts of Alternative 5 can be mitigated are untrue. (FWUA)

Reply: A specific discussion of the impacts of Flow Alternative 5 on the Friant Service area is provided in section E of Chapter VI. This alternative is the only alternative that results in an impact to the Friant Service area. This section acknowledges that the impact of the water supply reductions

under the alternative cannot be fully mitigated, but the section indicates that partial mitigation is possible through increased water conservation, conjunctive use and groundwater management. The Friant Water Users Authority has not submitted any information that shows these mitigation measures are infeasible in its service area.

Comment: [page 131] Chapter VI, page 131 et seq., explains the adverse effects on the Friant service area if it is made responsible for mitigating its downstream effects. The DEIR should include references to the relevant excerpts from the 1980 report jointly prepared by the USBR and the SDWA entitled " Effects of the CVP upon the southern Delta water supply Sacramento-San Joaquin River Delta, California." (SDWA)

Reply: Chapter VIII provides an appropriate discussion of the salinity and low flow problems on the San Joaquin River brought about by the CVP.

Comment: [page 132R] It seems appropriate that if a wide range of "immediately adjacent areas" are assumed to be part of the "watershed" for purposes of receiving contractual water supplies from the CVP Friant Unit, then the water supplies originating within these same areas should be included in the hydrologic analyses used to evaluate this flow alternative. Under this approach, water rights, storage, and diversions from the Kings River and Pine Flat Reservoir south to the Kings River and the Kern Water Bank would be identified and considered in the impact analyses. (DFG)

Reply: Water rights on the Kings River and the Tulare Basin were not included in the analysis for Flow Alternatives 3 and 4. The Tulare Basin is hydrologically isolated from the San Joaquin Basin in most years. If water rights in this area were to be curtailed, there would be no additional flow in the Delta.

Section E.1. Summary of Delivery Reductions

Comment: [page 131] Alternative 5 is the only alternative offered by the DEIR that expressly proposes releases from Friant Dam as a means of meeting the requirements of the 1995 Bay/Delta Plan. Requiring releases from Friant Dam to assist in achieving those requirements would be unreasonable and in contravention of the applicable objectives imposed by the California Constitution and the Water Code. Losses associated with water released from Friant Dam would be enormous before that water reaches Vernalis. The San Joaquin River channel is dry between Gravelly Ford and Mendota Pool, and below Sack Dam to the confluence of the Merced River; thus, losses in those reaches (a distance of over 65 miles) have been estimated at 40%-50% or greater. Although enormous amounts of water could be involved, releases from Friant Dam to assist in meeting the 1995 Plan objectives would likely be of relatively short duration (particularly in the case of pulse flows). Thereafter, the channel would again be dry. Additional losses could be expected downstream before water reaches the Delta. It is predictable that Friant Division water users would have to forego the use of an enormous amount of water in order to permit a relatively small amount of water to reach the Delta. None of these factors is noted in the DEIR.

In addition, during the water quality Phase of the original Bay/Delta Hearings, uncontroverted evidence was introduced that a reduction in Friant Division diversions in order to make flow releases into the San Joaquin River was not even a viable means of satisfying water quality objectives in the Delta, and particularly objectives for the San Joaquin River. This evidence establishes that such Friant Dam releases would be a waste and unreasonable use of water. The DEIR completely fails to

evaluate the actual magnitude of releases required of Friant if Alternative 5 were to be adopted. (FWUA)

Reply: The SWRCB will consider issues of reasonableness on a case by base basis depending on evidence received at the water rights hearing. Under Flow Alternative 5, year-round releases from Friant Dam would be required and the downstream channel would not go dry.

Comment: [page 133R] The DEIR understates potential Friant Division impacts. The estimates of economic impacts are inconsistent with the delivery impacts. The estimates of acreage taken out of production presented in Chapter VI are inconsistent with the estimate of impacts on the value of production in Chapter XI. (FWUA)

Reply: The estimates of impacts on acreage were taken from a study provided by the Friant Water Users' Authority. The assumptions and analytical techniques used in this study may be different from those used in the Economics Chapter of the DEIR so the results may not be comparable.

The estimates of economic impacts in Chapter XI were made by applying the water delivery impacts as estimated by the hydrologic operations studies to a supply-revenue function for each analysis area. This supply revenue function was derived from runs of the Central Valley Production Model. The supply-revenue function for Region K, which includes the Friant-Kern service area, shows that when surface water supplies are about 70 percent of normal, $70 to $80 in net revenues are lost for every acre-foot by which surface water supplies are cut back. If replacement groundwater is not available, the loss in revenue increases to $80 to $110 per acre-foot. The aggregate losses in Chapter XI are consistent with these per-acre-foot values generated by CVPM.

Comment: [page 133R] The Revised Chapters contain an incorrect cross-reference. At Page VI-133, the Revised Chapters reference a table containing the Class 1 and Class 2 contract amounts for the Authority's members. That reference is to Table VI-78 but should be to Table VI-79. (FWUA-2)

Reply: The reference has been corrected.

Section E.2. Effects in the Friant Service Area

Comment: [page 133] [In the DEIR]...there is no analysis of the impacts on the cultural resources within the Friant service area resulting from such reduced water supplies. (FWUA)

Reply: The SWRCB assumes that impacts to the cultural resources within the Friant service area would occur only when new lands are brought into production. It is unlikely that new lands would be brought into production as a result of a reduction in water supplies. Therefore, reduced water supplies should have no impacts on the cultural resources in the Friant service area.

Comment: [page 133] The DEIR understates the amount of groundwater pumping which would result within the Friant Division as the result of the implementation of Alternative 5. With no other sources of water readily available and the enormous investments in permanent crops, farmers would have no choice but to turn to groundwater until land subsidence, substantially increased pumping costs due to overdraft and/or exhaustion of groundwater supplies ultimately drove them from business. (FWUA)

Reply: Additional data or information is not provided to show that the estimate of additional groundwater pumping resulting from Alternative 5 in the Friant service area is understated. The pumping levels cited in the DEIR are obtained from a report prepared for the Friant Water Users' Authority by Northwest Economic Associates. Thus, there is no basis to re-evaluate that number. The statements on the impacts of additional groundwater pumping in the Friant service area are noted.

Comment: [page 133] It should be noted that conjunctive use is already an important element of water use in this area and that increased groundwater use, as a long-term measure, is of limited usefulness, as the DEIR concludes. (USDOI)

Reply: Comment Noted.

Comment: [page 133R] The DEIR should analyze wetlands impacts of reallocations of water away from the Friant Division. Particularly because of the conjunctive use aspects of the Friant Project, significant wetlands benefits are derived from the use of Friant water. In recent years, pilot projects pursuant to which groundwater recharge activities are conducted so as to maximize wetlands benefits have been undertaken with great success. The DEIR fails to discuss such projects and to acknowledge the potential loss of wetlands (and opportunities for the creation of wetlands) within the Friant service area if water is taken from the service area through adoption of any of the Alternatives. (FWUA)

Reply: Only Flow Alternative 5 requires a flow contribution from the Friant service area. Groundwater recharge areas are primarily in the Arvin Edison Water Storage Dist. The SWRCB is not aware of any significant wetland resources in this area that would be adversely affected by implementation of this alternative.

Comment: [page 135] The reference to Figure VI-37 should be to Figure VI-33. (USDOI)

Reply: Your comment is correct and the text has been revised.

Comment: [page 136] Export area impacts: Reduced acreage of crops such as alfalfa (-41%) and grain (-21.6%) will adversely affect foraging habitat for Swainson’s hawks. Rice acreage reductions (-8.8%) would reduce waterfowl habitat. (DFG)

Reply: The potential impacts referred to (reduction in crop acreages) would only occur under Alternative 5. With regard to impacts to Swainson's hawk:

1. the Friant Service Area is on the fringe of Swainson's hawk distribution, thus the number of these birds likely to be affected would be small;
2. a change from alfalfa and grain does not necessarily mean that the quality of foraging habitat on these lands would be significantly reduced, since the choices include fallowing or shifting to other crops that may be suitable foraging habitat; and,
3. a reduction in acreage of other crops which are not suitable foraging habitat (i.e. cotton), could result in an overall improvement in foraging habitat conditions.

With regard to impacts to waterfowl habitat, an 8.8% reduction (561 acres) of rice over the Friant Service Area is not a significant impact as rice fields are only a portion of the waterfowl habitat in the region.

CHAPTER VII. ALTERNATIVES FOR IMPLEMENTING SUISUN MARSH SALINITY OBJECTIVES

Comment: A strong case can be made that the Suisun Marsh salinity objectives (with DFG's, alternative approach) combined with the other 1995 Bay/Delta Plan objectives such as X2 will, as a by-product, achieve the goals of the Suisun Marsh narrative standard. The only exception may be numerical objectives for the summer (e.g. June, July and August). (DFG)

Reply: The X2 flow objective provides more Delta outflow during the February to June period than would have occurred under D-1485. Therefore, implementation of the 1995 Bay/Delta Plan will create less saline conditions in the spring when compared to the base case. Whether this will achieve the Suisun Marsh narrative objective is a matter of debate within the Suisun Ecological Workgroup.

It is unclear to what numeric objectives the commentor is referring, as there are no numeric objectives established for the Marsh during the June to August period.

Comment: The DFG believes that the 1995 Bay/Delta Plan, including its X2 and outflow objectives, do not adversely affect tidal or managed wetland habitat for the salt marsh harvest mice or California clapper rail. Neither Alternative 5 nor the alternative DFG recommends with limited flow restoration in Green Valley Creek, will adversely affect salt marsh harvest mice, California clapper rail, delta smelt, or winter-run and spring-run chinook salmon. The natural salinity gradient in the Suisun Marsh will be maintained and no adverse effects will occur to tidal wetland plant associations. (DFG)

Reply: The DEIR states on page VII-52 that Alternatives 2 and 4 have the potential to impact the salt marsh harvest mouse and the California clapper rail due to artificial freshening in the northwest corner of the marsh. The SWRCB recognizes that this is not a settled issue and that it has been the subject of debate within the Suisun Ecological Workgroup. DFG's comment is noted.

Comment: Stockton suggests that the design of the Suisun Marsh Salinity Control Gate is very similar to the head of Old River gate design that will be necessary for adaptive management of the San Joaquin River fisheries, salinity, and DO in the South Delta. Just as the SMSCG is operated during periods of the tidal cycle to manage flows in Suisun Marsh channels when salinity reduction is needed, so a permanent head of Old River gate should be operated during periods of the tidal cycle in response to fisheries and DO monitoring to manage flows in the South Delta channels. (Stockton)

Reply: Comment noted.

Comment: Morrow Island Land Company, which owns approximately 700 acres in the Suisun Marsh at the location of compliance station S-35, is in favor of Suisun Marsh Alternative # 5. We especially feel that the X-2 isohaline at Chipps Island (Suisun Bay) will assure appropriate salinity objectives for S-35. We also believe that some entity (DWR, USBR, or SRCD) should be responsible for meeting salinity objectives in the Suisun Marsh and that S-35 should not be removed as a compliance station. (MILC)

Reply: Comment noted.

Comment: The USFWS proposes analysis of another alternative, which would implement the narrative standard by applying benchmarks for tidal marsh. Although the Suisun Ecological Workgroup (SEW) has not developed scientifically based, numeric objectives for the Marsh, the USFWS has participated in several SEW subcommittees that are addressing the effects of water salinity objectives on listed plant and animal species. In those subcommittees, the USFWS has recommended that water salinity levels throughout the Marsh would be determined indirectly by the attainment of the X2 Delta Outflow objectives. Under this scenario, all compliance stations currently within the Marsh would become monitoring stations for water salinities. Furthermore, California clapper rail and salt marsh harvest mouse habitat and populations at these and other locations throughout the Marsh could be monitored as recommended in the USFWS's biological opinion for the promulgation of Federal water quality standards to assess the effects on these species. This approach would require that the Montezuma Slough Salinity Control Gates not be operated, except possibly in individual or consecutive years of extreme drought conditions. The USFWS believes that alternative management activities for the managed wetlands are available and could be implemented to offset any increases in channel water salinities and thus still provide for preferred waterfowl food plants within these managed areas. While not completely providing for historic salinity conditions within the Marsh, the USFWS believes this approach would: (1) improve habitat conditions for listed plants and animals within existing tidal marshes in the Marsh, (2) facilitate improved management of salt marsh harvest mouse mitigation lands in diked wetlands, and (3) better accommodate tidal restoration of diked wetlands in the Marsh to meet the recovery objectives of federally listed and proposed species. This alternative should be analyzed in the DEIR. (USDOI)

Reply: The DEIR states (page VII-20) that conditions necessary to achieve the brackish marsh narrative objective are not adequately defined at this time. The Suisun Ecological Workgroup is expected to deliver its final report to the SWRCB in June 1999 and the issue of how best to implement the narrative objective will be taken up in the next triennial review of the 1995 Bay/Delta Plan. The USFWS alternative will not be analyzed in the FEIR.

Comment: Under Fish and Game Code Section 5937 and the public trust doctrine the DFG believes that there is potential suitable fisheries habitat and a fishery could be supported if minimum releases of between one and five cfs are made in Green Valley Creek. The SWRCB should require these releases along with other releases described above. (DFG)

Reply: The modeling performed by DWR indicates that Green Valley Creek flows in the one to five cfs range would have very little effect on salinity in the western marsh. The purpose of the DEIR and the water right hearing is to devise and implement alternatives for meeting 1995 Bay/Delta Plan objectives. While Green Valley Creek flows pursuant to Fish and Game Code 5937 may benefit the local creek environment, the imposition of such a flow regime is not part of the current proceeding.

Section A.1. BACKGROUND, Regulatory History

Comment: [page 01] Care should be taken here that the acreage listed on page VII-1 is specific to the SRCD boundary that ends at the Contra Costa County line. The statutory Marsh includes the Contra Costa shoreline. (DWR)

Reply: The acreage listed is specific to the SRCD. A citation has been added to document that fact.

Comment: [page 02] The location of Station S-35 on Figure VII-1 is incorrect. The actual location is approximately 1/2 mile upstream (south) on Goodyear Slough. We suggest that the map should include a general location for the Roaring River Distribution System, Morrow Island Distribution System, and the Goodyear Slough Outfall. (DWR)

Reply: The map on page VII-2 (Figure VII-1) has been revised to incorporate the suggestions.

Comment: [page 03] In the third paragraph, "...uplands" should be changed to "...annual and perennial grasslands and vernal pools adjacent to the marsh were classified as the secondary management zone." (DWR)

Reply: Revision made to text.

Section A.1.a. 1978 Delta Plan, D-1485, and the 1985 Amendments

Comment: [page 03] In the fourth paragraph, the correct generic name for brass buttons is "Cotula". (DFG)

Reply: Revision made to text.

Comment: [page 04] Studies by Batzer et al (1993, Wetlands 13:41-49) conducted in Suisun Marsh identified a variety of preferred invertebrate foods consumed by waterfowl in Suisun Marsh. These invertebrates were present in pickleweed (Salicornia virginica). Pickleweed was once dominant to subdominant in the high and middle marsh zones of Grizzly Island prior to diking of these lands (Mason 1972). The DFG may have underestimated the value of this historic habitat when they recommended management to eliminate pickleweed in managed wetlands of Suisun (Rollins 1981). The importance of pickleweed habitat for waterfowl is recognized by some private landowners in Suisun. This pickleweed habitat also hosts native endangered species such as the salt marsh harvest mouse. (DWR)

Reply: A reference to the Batzer paper has been added. The paper does not reach any conclusion regarding the value of pickleweed habitat for waterfowl. It concludes that invertebrates dominating the brackish habitats of the Suisun marsh were identical or closely related to species found in freshwater habitats throughout the Central Valley. The invertebrates are found where hydrologic conditions are correct, rather than any particular plant association. That invertebrates are found in pickleweed areas means that this habitat is capable of supporting waterfowl.

Section A.1.b. The Suisun Marsh Protection Agreement

Comment: [page 04] Revise the title of this section to read: "The Suisun Marsh Preservation Agreement" (DWR)

Reply: Revision made to text.

Comment: [page 05] Change the second sentence of the third paragraph from: "The first and most..." to "The second phase and most..." (DWR)

Reply: Revision made to text.

Comment: [page 05] In the fourth sentence of the third paragraph, change the word "salty" to "more saline." (DWR)

Reply: Revision made to text.

Comment: [page 05] Add the following sentence after the first sentence of paragraph 3: "The Initial Facilities (phase 1) were constructed in 1980 including the Roaring River Distribution System, Morrow Island Distribution System, and Goodyear Slough Outfall. (DWR)

Reply: Revision made to text.

Comment: [page 07] In the second sentence of the fourth paragraph, change: "The discussions are nearly complete, and the..." to "Execution of Amendment III is pending completion of the CEQA/NEPA and CESA/ESA environmental documentation process, and the..." (DWR)

Reply: Revision made to text.

Comment: [page 07] In the third sentence of the fourth paragraph, strike the words, "throughout the entire marsh" so that the sentence reads, "...soil salinity conditions in all years on managed wetlands than would strict adherence to the salinity objectives." (DWR)

Reply: Revision made to text.

Comment: [page 07] In the fourth sentence of the third paragraph, change: "...augmentation in Green Valley Creek, were conducted in 1994." to "...augmentation in Green Valley Creek, were conducted in 1994 with North Bay Aqueduct water." (DWR)

Reply: Revision made to text.

Section A.1.c. 1995 Bay/Delta Plan

Comment: [page 07] There are fundamental flaws in the D-1485 Suisun Marsh salinity objectives. The objectives were established to promote seed production of a single plant species, alkali bullrush, then thought to be a major component of waterfowl diet. It is also wrong to assume that channel water salinity is the controlling factor for maintenance of quality waterfowl habitat (i.e. maximum alkali bullrush production). (USDOI, DWR)

Reply: The commentors imply that the Suisun Marsh salinity objectives should be reexamined within the EIR and the water right hearing to implement the Bay/Delta Plan. The purpose of the hearing and the EIR is to assign responsibility for implementation of objectives in the Bay/Delta Plan, and to determine the environmental effects of implementation. The next triennial review is the proper forum in which to consider underlying problems with the objectives themselves.

The objectives were designed to produce applied water salinity conditions capable of supporting 90 percent of maximum alkali bullrush seed production and 60 percent seed germination. Alkali bullrush is a perennial plant which does not rely on annual germination success. Furthermore, alkali bullrush appears to be a less important part of waterfowl diet than originally thought and it can be shown that the plant thrives in other more saline parts of the estuary. Moreover, DWR has shown in their "Demonstration Document" that the habitat conditions within the managed wetlands are strongly influenced by management practices. Adjacent duck clubs diverting from the same channel, and therefore applying water of the same salinity, can produce markedly different habitat conditions, depending upon the management methods employed.

Waterfowl management considerations were the driving force behind the D-1485 objectives. In the future, the use of water will need to be balanced with other beneficial uses in the marsh, such as preservation of fish and wildlife, and protection of threatened and endangered species.

Comment: [page 08] Revise the eleventh sentence of the second paragraph to read: "Lastly, the plan recommended that the DWR form a multi-agency Suisun Marsh Ecological Work Group (SEW)." (DWR)

Reply: Revision made to text.

Section A.1.d. SWRCB Order WR 95-96

Comment: [page 08] Delete the word "relaxed" from the fourth sentence of the first paragraph. (DWR)

Reply: Revision made to text.

Comment: [page 08] Revise the fourth sentence of the first paragraph to read: "The SMPA deficiency objectives, as applied in water short years..." (DWR)

Reply: Revision made to text.

Section A.2. Historical Salinity Conditions in Suisun Marsh

Comment: [page 08] Regarding the list of factors affecting salinity, edit item 4 to read, "...Salinity Control Gate operation (beginning October 31, 1988)" (DWR)

Reply: Revision made to text. The correct date is shown in the FEIR.

Comment: [page 08] It is erroneous to continue to report salinity as the variable of "primary importance". While salinity is controllable and measurable making it a convenient regulatory parameter, the direct relationship of channel salinity to vegetation pattern in managed wetlands is problematic. Water management controlling the depth and duration of flooding and ultimately soil redox potential is the causative variable in plant distribution patterns in diked managed wetlands. Natural tidal regimes influencing the depth and duration of flooding in the undiked tidal wetlands are also of primary importance in these natural areas. See the SEW Brackish Marsh Vegetation

Subcommittee Report submitted to SWRCB in September 1997 for literature citations which support this statement. (DWR)

Reply: The text has been revised to read, "The controllable, and most easily measured, water quality parameter in Suisun Marsh is salinity." There is little doubt that management practices play an important role in determining plant distribution patterns within the diked wetlands. This point is well illustrated in the Suisun Ecological Workgroup Interim Report (SEW 1997) and the DWR Demonstration Document (DWR 1997c).

Section B. PHYSICAL DESCRIPTION OF EXISTING FACILITIES

Comment: [page 09] A paragraph should be added describing the Suisun Marsh existing facilities and their salinity impact. These facilities are Roaring River Distribution System, Morrow Island Distribution System, and Goodyear Slough Outfall, and the SMSCG. These facilities are operated for salinity control, and their operation could be modified depending on future actions. (DWR)

Reply: Revisions have been made to the text.

Section B.1. Green Valley Creek and City of Vallejo Reservoirs

Comment: [page 14] Revise the fourth sentence of the second paragraph to read: "Green Valley Creek can influence flows into Cordelia and to a lesser extent Goodyear Slough and can therefore..." (DWR)

Reply: Revision made to text.

Comment: [page 15] Add Cordelia Road to the map of Figure VII-4. (DWR)

Reply: The suggested revision has been made to Figure VII-4.

Comment: [page 16] In the first sentence of the fourth paragraph, remove the phrase "northeast of the other two reservoirs" (DWR)

Reply: Revision made to text.

Section B.2. North Bay Aqueduct

Comment: [page 16] It is not correct to assume that because the entire capacity of NBA is not being used right now that it is available to help meet Suisun Marsh objectives. (DWR)

Reply: Section B.2 has been edited to reflect the comment.

Comment: [page 16] Revise the second sentence of the first paragrapg to read: "The capacity of the NBA is 174 cfs..." (DWR)

Reply: Revision made to text.

Comment: [page 18] Add the following sentence to the end of the second paragraph: "The city plans to construct a storm discharge retention pond where the ditch is located." (DWR)

Reply: Revision made to text.

Section B.3. Fairfield-Suisun Sewer District Wastewater Treatment Plant

Comment: [page 19] Append to the end of the 4th paragraph: "In a letter to the DWR dated April 23, 1997, the FSSD responded that there are too many obstacles to proceed with the proposal at this time." (DWR)

Reply: Revision made to text. The referenced letter is included as an appendix in DWR's "Demonstration Document".

Section B.4. Lake Berryessa and Putah-South Canal

Comment: [page 19] In the first sentence of the second paragraph, the Figure referred to as "VII-5" should be "VII-5b". (DWR)

Reply: Revision made to text.

Section C. ALTERNATIVES FOR IMPLEMENTING THE SUISUN MARSH OBJECTIVES

Comment: [page 20] Commentors expressed concern that the DEIR had either failed to identify an implementation strategy for the Suisun Marsh narrative objective, or to establish a program to monitor the long term effects of the numeric salinity objectives on brackish marshes. (BISF, USDOI, EDF)

Reply: The DEIR states on page VII-20 that conditions necessary to achieve the Suisun Marsh narrative objective are not adequately defined at this time. SWRCB staff believes that this continues to be the case. The 1995 Bay/Delta Plan established the Suisun Ecological Workgroup (SEW) to investigate this issue and to make recommendations regarding the narrative objective.

SWRCB staff has participated actively in the SEW process. There are fundamental differences of opinion within SEW as to what salinity regime will provide the most benefit to the ecosystem as a whole. Waterfowl interests have defended the present objectives, which they see as necessary for management of diked wetlands. Others, concerned with maintaining biodiversity in the undiked brackish tidal marshes, have called for a more variable salinity regime. All factions within SEW recognize the importance of long-term monitoring and will include specific recommendations in the final SEW report.

It is clear that there is insufficient information at this time to make a determination as to what numeric salinity objectives will provide the highest overall level of protection. There is a growing awareness of the importance of brackish tidal marsh as habitat for a wide variety of plants and animals and a refuge for sensitive species in particular. It is also clear that Suisun Marsh, when viewed from a state-wide perspective, is less critical as waterfowl habitat than it was when D-1485 was adopted. At

the present time, there are three major ecosystem initiatives underway: 1) the San Francisco Bay Area Ecosystem Goals Project, 2) the CALFED Ecosystem Restoration Program, and 3) the USFWS Tidal Marsh Recovery Plan. Taken together, these initiatives could significantly increase the total acreage of brackish tidal marsh in Suisun and thus ease the conflict between proponents of waterfowl habitat versus brackish marsh. In view of the above, the Suisun Marsh narrative objective should be reviewed at the next triennial review.

Comment: [page 20] Revise the first sentence of the first paragraph to read: "...the DWR and the USBR will operate the Initial Facilities and SMSCG when..." (DWR)

Reply: Revision made to text.

Section C.1. Suisun Marsh Alternative 1

Comment: [page 21] Revise the third sentence of the first paragraph to read: "D-1485 outflow objectives are in effect and the Initial Facilities and SMSCG are in place..." (DWR)

Reply: Revision made to text.

Comment: [page 21] Revise the first sentence of the second paragraph to read: "...plans to meet the western Marsh objectives under these base case hydrology conditions, and if the SWRCB..." (DWR)

Reply: Revision made to text.

Section C.2. Suisun Marsh Alternative 2

Comment: [page 21] Revise the fourth sentence of the first paragraph to read: "...of the Cordelia-Goodyear Ditch and an associated tide gate structure, and through flow augmentation in Green Valley Creek with NBA water (DWR 1993). (DWR)

Reply: Revision made to text.

Comment: [page 21] Revise the first sentence of the third paragraph to read: "...and described in the Western Suisun Marsh Salinity Control Project Screening Report (DWR 1993)." (DWR)

Reply: Revision made to text.

Comment: [page 22] Revise the third sentence of the fifth paragraph to read: "The inlet and outlet gates would be operated in conjunction." (DWR)

Reply: Revision made to text.

Section C.5. Suisun Marsh Alternative 5

Comment: [page 22] Revise the second sentence of the first paragraph to read: "The following management actions, as recommended by the parties to the SMPA Amendment III, are implemented as described in the "Demonstration Document" (DWR 1997c). (DWR)

Reply: Revision made to text.

Comment: [page 22] Change all occurrences of the phrase "Water Management Program" to " Water Manager Program" in this Section. (DWR)

Reply: Revision made to text.

Comment: [page 23] The location of Station S-35 in Figure VII-6 is incorrect. The actual location is approximately 1/2 mile upstream (south) on Goodyear Slough. (DWR)

Reply: The location of S-35 has been corrected on Figure VII-6.

Comment: [page 25] Change section C.5 from "(Draft SMPA Amendment Three, March 26, 1997)" to "(Draft SMPA Amendment Three, September 9, 1997)." (DWR)

Reply: Revision made to text.

Section C.6. Suisun Marsh Alternative 6

Comment: [page 25] The paragraph beginning with "Lake Berryessa.." on page VII-25 should note that no water has been transferred under the referenced agreements. It should also note that in the future, the North Bay Aqueduct may be operating at full capacity for delivery of SWP supplies so repayment for water used for the Suisun Marsh may have to be made during times only when excess capacity exists in the North Bay Aqueduct. Additionally, because of water quality and fishery concerns, additional deliveries through the North Bay Aqueduct can not always be assured. (SCWA)

Reply: The text has been edited to add the following language: "...however, no water was actually transferred under these agreements. In the future, the NBA may be operating at full capacity for delivery of SWP supplies, so repayment of water used for the Suisun Marsh may be made during times when excess capacity exists." The water quality and fishery issues are dealt with elsewhere in the chapter.

Comment: [page 25] DWR never actually obtained water from SCWA under the 1995 Agreement. The last sentence of the second paragraph would be more accurate as follows: "In the past, the SCWA has agreed to provide water to agencies, including DWR, by agreement (SCWA Agreements 1992 and 1995)." (DWR)

Reply: Revision made to text.

Comment: [page 25] The third paragraph references the Sacramento County Superior Court judgment regarding the Putah Creek Council case. Please note that this judgment is currently under appeal and has been stayed. (SCWA)

Reply: The following revision has been made to the text: "The Court's decision is currently under appeal."

Section D.1.a. ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES, Salinity, Modeling Results

Comment: [page 27] In the third sentence of the first paragraph, remove the word "averaged." (DWR)

Reply: Revision made to text.

Comment: [page 28] It is not clear from Table VII-4 what the "Seasonal Average" column represents. Is it the average of the frequencies for eight months in the row, or is it the 73-year frequency? (DWR)

Reply: The "Seasonal Average" column in Table VII-4 is the average of eight months in a row. This column will be removed from the FEIR, as it does not contribute additional useful information.

Section D.1.b. Salinity Impacts at S-97

Comment: [page 41] Change all references to exceedance frequency percent differences to percentage point differences. For example, 2nd paragraph, 3rd sentence: "Under Alternative 5, the annual exceedance frequency is 19.8 percentage points greater than under Alternative 4, and 6.9 percentage points less that alternative 3. (DWR)

Reply: Revisions made to text.

Section D.1.e. Suisun Marsh Salinity Control Gate Operation

Comment: [page 42] This section may misrepresent the role of the September SMSCG operation. The purpose of September gate operation is not to reduce the need for gate operation in October of drier year types or to reduce the magnitude of exceedence. September operation helps to reduce the salt burden applied to managed wetlands in drier years. This will improve wetland habitat management and improve leaching efficiency the following spring. (DFG)

Reply: A sentence describing the purpose of September gate operation has been added to the description of Alternative 5 (section C.3). There is no need to change text on page VII-42.

Section D.2.a. Hydrology, Green Valley Creek

Comment: [page 44] In the third sentence of the fourth paragraph, it is misleading to suggest that an October augmentation of 900 cfs would "occasionally" be needed. In fact, 900 cfs is needed on only one month of the 73-year analysis period. It would be more indicative to say that extreme augmentations would be greater than 150 cfs 5 percent of the time up to a high of 900 cfs. (DWR)

Reply: Text has been modified to reflect the intent of the comment.

Section D.2.d. North Bay Aqueduct

Comment: [page 46] Revise the first sentence of the first paragraph to read: "The NBA has a capacity of 174 cfs from Barker Slough..." (DWR)

Reply: Revision made to text.

Comment: [page 46] Under the "North Bay Aqueduct" section, there was reference to the NBA being a canal. In fact, it is a pipeline for its full length. (SCWA)

Reply: Revision made to text.

Section D.3.b. Landscape (Construction-Related) Impacts, Alternatives 2 and 4

Comment: [page 48] The Cordelia-Goodyear Ditch and Goodyear Slough Tide Gate alternatives would result in significant environmental impacts that extend beyond initial construction. Operation and routine maintenance of these facilities would result in potential significant impacts to endangered fish and salt marsh harvest mice. (DWR)

Reply: The following language has been added to both sections: "Operation and routine maintenance of this facility could result continuing impacts to endangered species in the area."

Section D.3.c. Alternative 5

Comment: [page 48] The description of Alternative 5 should be revised to indicate environmental documentation is being provided by DWR, USBR, SRCD, and the DFG. (DFG)

Reply: Revision made to text.

Section D.4. Potential Impacts to Terrestrial and Wetland Resources

Comment: [page 49] The DEIR must analyze the specific effects of the Suisun Marsh alternatives on the federally listed plant and animal species within marsh. Commentors are concerned about the potential adverse effects that the alternatives, as well as the objectives themselves, could have upon these species. (USDOI, DWR)

Reply: The DEIR notes (page VII-52) that introduction of substantial quantities of fresh water into the northwestern region of the marsh under Alternatives 2, 4 and 6 could have a negative impact on species requiring brackish or salt marsh. As described in the DEIR, Alternative 5 could have had a similar, though more muted effect, as the flow augmentation rates were considerably less. Green Valley Creek augmentation is no longer a component of Alternative 5.

The salt marsh harvest mouse, the California clapper rail, the soft-haired bird's beak and the Suisun thistle are endangered species occurring in the marsh which require brackish conditions. The DEIR clearly identifies the impacts to endangered species from flow augmentation as potentially significant, and for that reason selected Alternative 5 as the environmentally preferred alternative.

The commentors raise the more general concern about the impact of SMSCG operation and the objectives themselves on salt marsh species. The modeling clearly shows that gate operation is necessary to meet current objectives throughout much of the marsh. The real issue, is whether current objectives provide adequate protection to brackish tidal marshes and associated species. This issue has been debated at length within the Suisun Ecological Workgroup and properly belongs in the next triennial review of the objectives. The focus of the current proceeding is implementation of the 1995 Bay/Delta Plan. The provision in the Plan that permits equivalent protection to that afforded by the objectives allows impacts from flow augmentation to be avoided.
The impact to brackish marsh species from salinity control is not a settled issue. Operation of the SMSCG suppresses extremely saline conditions and these extreme conditions may well play a role in maintaining essential habitat for sensitive species. However, the decline in these species is most closely linked to habitat loss. Ongoing efforts to increase the total acreage of brackish tidal marsh will most likely be the critical factor in maintaining viable populations of sensitive species in Suisun.

Comment: [page 49] Section D.4 states, "Suisun Marsh alternatives will result in channel water salinities slightly different than historic conditions." While this statement is true, the potential impacts are much broader and more complex than this section suggests.

Temporal and spatial variability in flow and salinity regimes which most closely matches historic (pre-diversion) ranges (including extremes) are the factors necessary to sustain all of the diverse biological resources in Suisun Marsh, including waterfowl resources. Management of the system for protection of important beneficial uses such as drinking water supply, agricultural water supply, and fish resources in the Delta preclude extreme high salinity events once experienced within the Marsh. These extreme high salinity periods may be critically important to some species endemic to the Marsh, just as extreme flood events and fresh flow pulses have been identified as important to other resources such as cottonwood regeneration in the Sacramento-San Joaquin Delta. A less than ideal year for waterfowl food production may be a critical time period for seed bank replenishment of other species such as rare, endemic annual plants. It is important to consider the full range of natural variability necessary to sustain this system. (DWR)

Reply: The text in section D.4 has been revised to reflect the comment.

Comment: [page 50] On Table VII-11, the soft-haired bird's beak and the Suisun thistle are now federally listed as endangered (not Proposed Endangered). California black rail is a species that may be influenced by changes in salinity gradients. While California black rails occur in the Delta, Suisun, and other North Bay Marshes, they occur at exponentially higher densities in holophytic plant communities of Suisun and North Bay Marshes than in freshwater emergent/willow shrub thickets in

the Delta. A shift to more freshwater conditions could result in a decline in this species, which is at its highest breeding densities in holophytic plant communities. (DWR)

Reply: Revisions have been made to Table VII-11.

Section D.4.c. Alternative 5

Comment: [page 52] The FEIR should note that environmental documentation for the SMPA Amendment III is being prepared jointly by the DWR, USBR, SRCD and the DFG. (DFG, DWR)

Reply: Revision made to text.

Comment: [page 52] The concept endorsed is a water manager approach not a water master approach that may apply to an adjudicated stream. This distinction should be made clear. (DFG, DWR)

Reply: All references to the words "water master" have been changed to "water manager."

Comment: [page 52] At the end of the second paragraph, add DFG and SRCD to list of environmental documentation participants. (DWR)

Reply: Revision made to text.

Comment: [page 52] Add a sentence to the first paragraph stating that FSSD has elected not to proceed at this time with the Green Valley Creek flow augmentation action. (DWR)

Reply: Revision made to text.

Section D.5.a. Aquatic Resources, Status and Trends of Aquatic Resources in Suisun Marsh

Comment: [page 54] The sentence "The four fall-midwater trawl stations...Native fishes." does not belong in this section. The fall-midwater trawl stations are not part of the UC Davis study in Suisun Marsh. (DWR)

Reply: Deletion made to text.

Comment: [page 54] In 1994, biologists from the University of California at Davis added four stations to the Suisun Marsh study bringing the total to 21 stations. Six stations are east of Cutoff Slough. The four new stations were added to better represent the entire marsh. Consequently, the sentence "The western stations are considered representative of the marsh as a whole" should be deleted or changed. This information is available in Matern et al., 1995. (DWR)

Reply: Revision made to text. Reference added to bibliography.

Comment: [page 55] The chameleon goby was misidentified in the UC Davis study until 1994. All references to chameleon gobies in the UC Davis study in Suisun Marsh should be changed to shimofuri goby, Tridentiger bifasciatus. This information is available in Matern et al., 1995. (DWR)

Reply: All references to chameleon goby have been replaced with shimofuri goby.

Section D.5.b. Effects of Suisun Marsh Salinity Control Gate Operation

Comment: [page 058] The 1994 Suisun Marsh Salinity Control Gate salmon tracking studies should be referenced and discussed. (DFG, DWR)

Reply: The July 1997 DWR report on SMSCG fisheries monitoring has been added as a reference. A paragraph has been added which reads as follows: "The study was repeated in 1994 and no significant differences were found in passage times. When data for the two years were combined, the overall trends of decreasing passage numbers and increasing passage time with installation of the flashboards were consistent between years. Results from these studies suggest that the SMSCG has the potential to delay the upstream migration of adult salmon. The biological significance of this delay, however, is uncertain and is the subject of ongoing study (DWR 1997d)."

Section D.5.c Effects of Green Valley Creek Flow Augmentation

Comment: [page 60] During the WSCT fisheries monitoring, staff checked for spawning salmon and redds at four locations, not seven. (DWR)

Reply: Revision made to text.

Section D.5.d. Effects of the Alternatives

Comment: [page 61] Under Alternative 5, there may be impacts to chinook salmon and steelhead trout from the flow augmentation into Green Valley Creek. During the WSCT questions were raised by agency biologists as to whether chinook salmon moved into the unlined ditch because of the presence of Sacramento River water or simply as a result of additional flow. Consequently, the use of FSSD water may not eliminate possible impacts to salmonids. (DWR)

Reply: Alternative 5 no longer includes Green Valley Creek Flow augmentation from FSSD. Therefore, this impact will not occur. The general issue in the comment is addressed in section C.5.c.

Comment: [page 61] Under Alternative 1, impacts to aquatic resources would result from changing salinity and the effect of Suisun Marsh Salinity Control Gate operation. For example, SMSCG operation may increase the passage time of adult salmon, but the biological significance of this effect is unknown. More information is available in DWR-ESO July 1997. (DWR)

Reply: Comment noted. The following text has been inserted: "Impacts to aquatic resources would result from changing salinity and SMSCG operation."

Comment: [page 61] The predicted frequency of September gate operation is less under the criteria in Alternative 5 than under actual conditions experienced since the gates were installed. The incremental increased impact described to aquatic resources would, therefore, not occur. (DFG)

Reply: Since the Suisun Marsh Salinity Control Gates were installed, September gate operation occurred for the full month in 1994, for 5 days in 1989, and for 3 days in 1990. The modeling of Alternative 5 calls for full bore gate operation in 28 out of 73 years. The factual basis for the comment is unclear. Therefore, the statement that there will be no increased impact to aquatic resources due to September gate operations may not be correct.

Comment: [page 61] The text should note that fish screens would be an integral part of all portable pumps and would minimize fish entrainment. (DWR)

Reply: Revision made to text.

Comment: [page 61] Under Alternative 2, the fisheries impact of introducing Sacramento River water may be evident in more than just the northwestern marsh. During the 1994 adult salmon sonic tracking studies, a tagged salmon released in Montezuma Slough near Nurse Slough was recorded in Cordelia Slough during the WSCT flow augmentation. Modeling studies have also indicated that the effects of flow augmentation on salinity may be evident as far downstream as Suisun Bay. We suggest changing the term northwestern marsh to western marsh. More information is available in Edwards et al 1996. The Goodyear Slough Tide Gate may also impact the movement of delta smelt within the slough, may increase the number of predatory fish in the area, and consequently increase predation near the gate. (DWR)

Reply: The word "western" has been substituted for "northwestern." The language "Operation of the (Goodyear Slough)Tide Gate could also impact the movement of delta smelt within the slough, increase the number of predatory fish in the area, and thus increase predation near the gate" has also been added.

Section D.6. Recreation

Comment: [page 62] Waterfowl hunting is not the only recreational use of these lands, but it is the only one mentioned in this section. Non-consumptive recreation such as bird watching, canoeing, hiking, and wildlife observation are increasingly popular in the tidal marsh areas. Educational programs are conducted in the tidal marshes at Rush Ranch and DFG's Peytonia Slough Ecological Reserve. The Napa-Solano Audubon Society volunteers conduct Christmas bird counts and breeding season surveys in Suisun Marsh. Recreational boating is increasing in Suisun with the improvements to the Suisun City waterfront and harbor facilities. (DWR)

Reply: Comment noted. Language reflecting the comment has been added.

Comment: [page 62] While the current land use in Suisun is 88% diked seasonal wetlands, three major Estuary-wide resource agency planning efforts (San Francisco Bay Area Ecosystem Goals Project, CALFED Ecosystem Restoration Program Plan, and USFWS Tidal Marsh Recovery Plan) are calling for extensive tidal marsh restoration within Suisun Marsh to facilitate the recovery of endangered species and sensitive wetland habitat values. (DWR)

Reply: The planning efforts of the USFWS, CALFED and Ecosystem Goals Project have been referenced in the section dealing with recreational impacts. As these programs move forward, recreational uses of the Marsh other than waterfowl hunting may be expected to increase over time.

Section E. SUMMARY

Comment: [page 63] Add a sentence to the second paragraph regarding Initial Facilities (Phase I) and change SMSCG to Phase II. (DWR)

Reply: Revision made to text.

Comment: [page 63] Note in the second paragraph that SMSCG operation began October 31, 1988. (DWR)

Reply: Revision made to text.

Comment: [page 63] In the third paragraph, change "Western Salinity Control Plan" to "Western Suisun Marsh Salinity Control Project" (DWR)

Reply: Revision made to text.

Comment: [page 63] The WSCT was not carried out for the entire salinity control season because hydrologic conditions were such that flow augmentation was not needed to meet objectives. (DWR)

Reply: Revision made to text.

Comment: [page 63] In the second paragraph, delete the word "always" and insert "with minor exceptions in water year 1991." (DWR)

Reply: Revision made to text.

Comment: [page 64] Revise the text in the fifth paragraph to read: "...or better protection to the managed wetlands. DWR and USBR petitioned the SWRCB to extend the compliance date for S-35 and S-97 to enable the SMPA parties to finalize Amendment III. The SWRCB granted a 180 day extension on October 30, 1997." (DWR)

Reply: Revision made to text.

Comment: [page 64] Revise the end of the third paragraph to read: "...to resident or migratory endangered species, and high naturally occurring winter and spring creek flows." (DWR)

Reply: Revision made to text.

Comment: [page 66] The SWRCB identifies Alternative 5 as the environmentally preferred alternative. The DFG believes that a variation on Alternative 5 is the preferred alternative. The data provided by the SWRCB in this DEIR provide the needed analysis to justify this modified alternative as the preferred alternative. The DFG recommends the following preferred alternative for the Suisun Marsh:

1. Implement a combination of Alternative 5 and Alternative 6 amended to include a sliding scale similar to Table II-4 of the 1995 Bay/Delta Plan to guide the level of augmentation. We recommend using the DFG's suggested flow scale contained in Attachment B.

2. Green Valley Creek flow restoration would be the shared responsibility of Fairfield Suisun Sewer District, City of Vallejo, SID, USBR through its Solano Project, and the Solano County Water Agency. The range of flow restoration would be 5 to 30 cfs depending on local hydrologic conditions. The flow provided would not be used to enhance channel salinity conditions above levels that would have otherwise occurred absent development of this local watershed. The east-west and north-south salinity gradient will be maintained.

3. Provide minimum reservoir releases of between one and five cfs in Green Valley Creek.

4. Provide releases from Lake Berryessa through the Putah South Canal and Green Valley Wasteway (up to 10 cfs) and releases from the FSSD waste water treatment plant (up to 20 cfs).

5. Maintain a net flow of three cfs in Boynton Slough from the treatment plant.

6. Stations S-35 and S-97 would remain monitoring stations and would not be converted to compliance stations. No releases of North Bay Aqueduct water should be made.

7. The lost yield of the Lake Frey and Lake Madigan component of the City of Vallejo's Lakes Water System could be offset by the City obtaining an alternative water supply for the 700 connections in unincorporated Solano County.

8. Require funding by DWR and USBR to conduct the fisheries and tidal wetland monitoring and evaluation needed to assist the SEW in its efforts to evaluate the questions outlined in the 1995 Bay/Delta Plan. This monitoring and evaluation could be carried out by or through the Interagency Ecological Program. (DFG)

Reply: DFG's proposal is well thought out and constructive. The environmental impacts are likely to be between Alternatives 5 and 6. The one to five cfs instream flow release on Green Valley Creek appears to be for the purpose of improving upstream habitat, rather than implementing the water quality objective at S-35 and S-97. To the extent that this is the case, it falls outside the scope of the key issues in the Bay/Delta Hearing Notice.

The SWRCB could adopt an alternative similar to DFG's recommendation based on existing environmental documentation. However, it should be noted that not all agencies agree that flow augmentation of 5 to 30 cfs in the western marsh would be beneficial. The USFWS, in particular, takes the opposite view.

CHAPTER VIII. ALTERNATIVES FOR IMPLEMENTING SALINITY CONTROL MEASURES IN THE SAN JOAQUIN RIVER BASIN

Comment: Stockton strongly supports the source identification and reduction efforts for salinity and selenium in the San Joaquin River basin that are described in this chapter. The tile drainage and wetlands drainage flow alternatives illustrate the potential for water quality management of the San Joaquin River. Stockton suggests that this watershed approach to water quality management (TMDL evaluation) should be extended to include other important variables (i.e., nutrients, algae, organic materials) that may have an effect on DO concentrations in the lower San Joaquin River. Stockton also believes that the SWRCB should explicitly acknowledge the need for such an approach. (Stockton)

Reply: Comment noted.

Comment: The approach presented in Chapter VIII is a step in the right direction, but does not go far enough. The solution to meeting the salinity objective at Vernalis is not continued dilution of the salt-laden waters of the San Joaquin River with fresh water from New Melones, but to reduce the pollution at the source. It is constitutionally unreasonable to require the release of many acre-feet of New Melones water which might be put to other beneficial use to dilute one acre-foot of polluted drainage from agricultural drains. The burden for preventing this pollution should be placed on those who cause it. (Stockton)

Reply: The DEIR identifies the activities that are under investigation or being implemented to reduce the salt load entering the river. It is reasonable to require the bypass or release from storage of sufficient water to mitigate the adverse effects of water development in the San Joaquin Basin. The CVP is a major cause of the salinity problem, and the CVP owns and operates New Melones Reservoir. The SWRCB will consider the balance between the water supply needs of other beneficial uses and the responsibilities of the parties contributing to the salinity problem in developing the water right decision for this proceeding.

Comment: The SWRCB should direct the CVRWQCB to issue waste discharge permits to parties discharging tile drainage to the San Joaquin River. The permits should limit the allowable salt load discharged to the river. (BISF, Stockton)

Reply: Waste discharge permits that limit the allowable salt load discharge may need to be issued at some point. Further time is needed to allow other alternatives to be implemented before pursuing this option.

Comment: The DEIR excludes from its analysis certain alternatives that are being analyzed in other forums. The DEIR analyzes only one alternative for salinity control in the San Joaquin Basin because the other alternatives identified in the DEIR are being analyzed by the SWRCB or other agencies in connection with other projects. Characterizing an EIR as programmatic is not grounds for limiting the analysis of alternatives. Therefore, the DEIR's analysis of alternatives must be expanded to include an analysis of feasible alternatives which is sufficient to permit a comparison of the alternatives' merits. The DEIR should analyze whether a reverse osmosis desalting plant is a feasible alternative for salinity control in the San Joaquin River. (WWD, CSJWCD)

Reply: Under the SWRCB's water right authority only one alternative - dilution - is considered to meet the Vernalis salinity objective. However, water quality related actions can also improve salinity conditions in the river. A major purpose of Chapter VIII is to provide a complete description of water quality actions and alternatives for dealing with the salinity problem in the San Joaquin River. As described in the chapter, most of these actions are already being implemented or analyzed in some other forum and duplication of these efforts is unnecessary. One water quality-related approach to the issue - maximizing assimilative capacity of the river - was not under active consideration in any other forum at the time the DEIR was prepared, and in order to provide a thorough treatment of the subject, an analysis of this approach was included in the chapter.

The CVRWQCB is the principal party responsible for developing and implementing appropriate water quality control actions in the Central Valley. The SWRCB, however, provides general direction to the RWQCBs. This direction does not require CEQA compliance. The only action contemplated by the SWRCB in this proceeding related to Chapter VIII is general direction regarding the need for water quality actions in the San Joaquin Basin. A programmatic-level analysis of possible direction is provided in the DEIR. The CVRWQCB will comply fully with CEQA before it takes any action.

Comment: The DEIR inadequately addresses mitigation steps that could be taken by the exporters, including curtailment of diversion, recirculation of water, and control of poor quality drainage, to reduce the demand on New Melones water to provide dilution flows. (CSJWCD)

Reply: Comment noted. Chapter VIII describes all of the water quality-related actions being implemented in the San Joaquin Basin. Recirculation of water is Flow Alternative 6, and it is analyzed in Chapter VI. Where appropriate, mitigation steps are identified, and if deemed necessary, the SWRCB will adopt a finding of overriding considerations for any impacts that cannot be mitigated.

Comment: [page 01] There is no investigation in the DEIR of the cumulative impacts of hitting the same water users with the costs of agricultural drainage control and the potential water costs of the recirculation alternative, or of any of the other flow alternatives. The DEIR acknowledges the need for mitigation but provides no analysis of the effects of mitigation on the predicted accomplishments of the proposal, nor is there any development of a mitigation plan. (SLDMWA)

Reply: The DEIR contains a detailed analysis of the flow alternatives and a programmatic analysis of the salinity control alternatives. The water supply impact of the flow alternatives is provided as is the economic impact of salinity control alternatives. These analyses adequately discharge the SWRCB's responsibilities. Mitigation measures are identified in the DEIR.

Section A. BACKGROUND

Comment: The EIR should address the causal connection among export pumping, drainage, and poor quality San Joaquin River water. (CSJWCD)

Reply: The connection among export pumping, drainage and poor quality San Joaquin River water is discussed in the section A of Chapter VIII.

Section A.1. Problem Description

Comment: [page 02] The location of the Chowchilla and Kaweah rivers is incorrectly identified in Figure VIII-1 and VIII-3. In addition, the Kaweah River is misspelled. (DWR)

Reply: The figures have been corrected.

Comment: [page 05] The DEIR states that by 1981 the entire flow of the San Luis Drain was subsurface drainage originating from approximately 8,000 acres in Westlands. This statement is misleading. A total of 42,000 acres in the northeast portion of Westlands was served by a subsurface collector drainage system discharging into the Drain. The 8,000 acres is fairly accurate if it is intended to denote actual area of drained lands: on-farm systems drain 5000 acres, collector systems influence an additional 3000 acres. The FEIR should reflect that subsequent to the closure of the San Luis Drain, Westlands has not discharged subsurface collector drainage beyond its district boundaries. (WWD)

Reply: Revisions made to text.

Comment: [page 06] The dashed boundaries of the drainage problem areas on Figure VIII-3 disappear on the easterly boundary from Mendota Pool north to the vicinity of Vernalis. It is confusing to have this open boundary. The dashed line of drainage problem areas would be easier to understand if it was drawn in on the alignment of the San Joaquin River to reflect where there is a substantial amount of acreage with problems. (DWR)

Reply: The map has been revised as recommended.

Comment: [page 07] Table VIII-1 should show the dates of completion and capacity for all the major reservoirs in the basin, including those that are no longer operational (e.g., Melones, Don Pedro, and Exchequer). Looking at the table, one could conclude that the major developments occurred fairly recently on the Stanislaus River, the Tuolumne River and the Merced River. (SJRG)

Reply: The table lists major reservoirs in the San Joaquin Basin. The original reservoirs (e.g., Melones, Don Pedro, and Exchequer) were comparatively small and do not warrant inclusion in the table.

Comment: [page 07] The 1980 report that was cited concluded that the CVP was responsible for 36% of the flow reduction on the San Joaquin River in below normal years, 37% of the flow reduction on the San Joaquin River in above normal years, and 50% of the flow reduction on the San Joaquin River in wet years. (SJRG)

Reply: Comment noted.

Section A.1.a. Salinity Sources

Comment: [page 07] The salt load and concentration discharged from Grasslands to the San Joaquin River may improve due to supply of better quality water for wetlands management. The text should reflect this situation. (DWR)

Reply: The DEIR accurately discusses the present salinity load and concentration discharged from the wetlands. The use of better quality water on the wetlands may result in a long-term improvement of the water quality of the discharge. The magnitude of the improvement and the length of time it will take to manifest itself are speculative.

Comment: [page 07] Throughout the text, several references are made to historic wetland releases, data, or management. The specific time period being cited needs to be defined in each case. Does "historic" refer to conditions in the valley prior to European settlement, CVP, or CVPIA? (GWD)

Reply: The term has been clarified in the text.

Comment: [page 07] The document continues to examine TDS loads. The amount of load entering the river is irrelevant to whether or not the Vernalis standard can be met and whether or not beneficial uses are being affected. The load can obviously be extremely high during times of high runoff due to precipitation or snow melt. (SDWA)

Reply: Comment noted. A concentration-based analysis of the alternatives is provided in the DEIR. The load description is provided for background.

Comment: [page 07] It is unclear how the historical wetland contribution of salts to the San Joaquin River of eight percent was estimated. This should be clarified. (USDOI)

Reply: The historical wetland contribution of salt load is based upon the assumption that 30 percent of the applied water to wetlands returned to the river at a water quality of 1,900 mg/l.

Comment: [page 07] In the discussion of salinity sources, the percentage allocations and figures VIII-4 through 7 should be updated to reflect shifts caused by implementation of the Grasslands Bypass Project, which will provide far more accurate information on quantity and quality of subsurface drainage discharges. (SLDMWA)

Reply: The figures accurately reflect the sources and magnitude of flow and TDS load during 1985 to 1994 water years. The DEIR already states that starting in 1996 all subsurface drainage that previously discharged to Mud and Salt sloughs was routed into the San Luis Drain because of the Grassland Bypass Project.

Comment: [page 07] The period 1985-94 was used in the description of the salinity sources, but this period is not a representative hydrologic base period. (SJRECWA-1A)

Reply: The description of salinity sources is part of the background discussion and is provided for illustrative purposes. This time period is sufficient to illustrate the major sources and magnitude of flow and salt load to the lower San Joaquin River.

Comment: [page 07] The background section on salinity sources is inadequate because the data used to highlight the problem does not adequately account for recent actions taken by SLDMWA members. (SLDMWA)

Reply: Recent actions taken by the SLDMWA members have been principally directed toward control of selenium sources. The background description provides an adequate overview of the situation.

Section A.1.b. Historical Salinity Conditions and Future Trends

Comment: [page 10] The DEIR's description of the history of addressing the salinity problem indicates that there has been a marked lack of meaningful actions by both the SWRCB and the CVRWQCB. This Plan and other plans recommend continued study, deferral to other processes, and unmet schedules. The salinity problem is a difficult situation with no easy or quick solutions. However, the Board is obligated under State and Federal law to protect the beneficial uses from being adversely affected by the poor quality drainage coming out of the CVP service area. (SDWA)

Reply: Comment noted. This comment does not address the environmental effects of the project.

Comment: [page 11] The SWRCB should clarify whether the rate of accretion and excretion of salts referred to in the discussion of future trends pertains to surface water, groundwater, soils/geologic material, or all of these. (SJRECWA-1A)

Reply: Accretion refers to all salts imported into the basin and excretion refers to all salts removed from the basin. Orlob's mass balance analysis did not account for processes such as precipitation that may remove salts from the surface water-groundwater system.

Comment: [page 11] The DEIR states that the quality of water available to water users diverting water from the lower San Joaquin River and the southern Delta has declined due to a salt load increase coupled with reduced flows due to water development. The major cause of the increase in salinity levels in the San Joaquin River has been from the discharge of saline drainage water from subsurface drains and the discharge of surface drainage water from wetlands into the San Joaquin River. (SJRG)

Reply: Subsurface agricultural drainage and wetlands discharges are major causes for the increase in salinity loads discharged to the San Joaquin River. However, reductions in flows due to upstream development have substantially exacerbated salinity concentrations in the river.

Section A.2.d. Regulatory History, 1991 Bay/Delta Plan

Comment: [page 13] The DEIR notes that the 1991 Bay/Delta Plan directed the CVRWQCB to develop and implement a salt load reduction program, including a plan to reduce annual salt loads by at least 10 percent, but that no water rights decision implemented that decision. Has that plan been

prepared? If not, Decision 1422 should be modified to relieve New Melones from the sole responsibility of meeting the standard. If the State and Regional Boards will not control salinity by using their water quality authority, the SWRCB should use its water rights authority to prevent delivery of water to lands on the west side of the San Joaquin Valley that contribute substantially to the salt load, rather than unconstitutionally imposing the burden on New Melones contractors adjacent to the Stanislaus River watershed who are not responsible for the pollution. (Stockton)

Reply: The CVRWQCB is implementing the SWRCB's direction regarding salinity load reductions through requirements for Drainage Operation Plans from parties discharging in drainage problem areas. These plans focus on water conservation. Determination of compliance with a ten percent load reduction target is problematic because of the large annual load changes caused by hydrologic variability. The CVRWQCB is presently preparing salinity water quality objectives for the San Joaquin River and a program for their implementation.

Section A.2.e. 1995 Bay/Delta Plan and Order WR 95-6

Comment: [page 14] Both the 1995 Bay/Delta Plan and the Basin Plan indicate that long-term salt management requires out-of-Valley discharge. Given the intractability of the problem despite the aggressive implementation of in-basin management techniques by the Grassland Basin Drainers, out-of-Valley discharge appears to be the only mechanism to significantly reduce San Joaquin River salinity, other than by continued dilution flows. The SLDMWA strongly supports the position of the SWRCB and the Central Valley RWQCB and urges the SWRCB to press forward with environmental review of long-term drainage solutions. Also, the Central Valley RWQCB Basin Plan contains a policy prohibiting activities that increase the discharge of poor quality agricultural drainage, which in effect placed a moratorium on installation of new tile drainage systems. Therefore, analysis of in-field storage through new tile systems is not presently applicable. (SLDMWA)

Reply: Comment noted.

Comment: [page 14] The DFG continues to have serious concerns about the element of the 1995 Bay/Delta Plan referencing the need for out-of-valley disposal. Substantially more extensive implementation of the recommendations of the San Joaquin Valley Drainage Program report titled "A Management Plan for Agricultural Subsurface Drainage and Related Problems on the Westside San Joaquin Valley" (SJVDP 1990) and implementation of the CALFED Bay/Delta Program is needed before out-of-valley disposal is considered. (DFG)

Reply: Comment noted.

Section A.2.f. Central Valley RWQCB Basin Plans

Comment: [page 14] The DEIR should mention that the 1996 RWQCB Basin Plan amendments requirement for meeting monthly selenium loads appears to be inconsistent with the regulated discharge proposal. While Basin Plans may be amended, the proposal for in-field storage and limited months of allowable discharge creates an irreconcilable catch-22 for the regulated parties. (SLDMWA)

Reply: A description of the effect of the regulated tile drain discharge proposal on the ability to achieve selenium load targets has been added to the DEIR. Implementation of the tile drain proposal would have to address the conflict between the proposal and the selenium load targets.

Comment: [page 14] The DEIR should include a statement that the Central Valley RWQCB has identified ". . . a valley-wide drain as the best technical solution to the water quality problems of the San Joaquin River and Tulare Lake Basins caused by agricultural drainage." (WWD)

Reply: The statement is made in section A.2.f. of Chapter VIII.

Section A.3. Existing Salinity Management Programs

Comment: [page 15] There is no discussion of why the programmatic EIR should not include investigation of evaporation ponds or treatment alternatives. (SLDMWA)

Reply: With respect to evaporation ponds, the DEIR notes that there are at least three methods (drainage reuse, evaporation ponds, and subsurface storage) for implementing a program of controlled releases to the San Joaquin River. In the programmatic analysis, only one of the these methods is evaluated, but at the project level, the Central Valley RWQCB will prepare a CEQA document, if appropriate, that considers other reasonable implementation methods. With respect to treatment, this alternative has been evaluated several times. The conclusion in these evaluations has always been that tile drainage can be treated to remove salt, but it is prohibitively expensive.

Comment: [page 15] The logic for the actions chosen for discussion is unclear. The subject is salinity management in the San Joaquin River yet relevant ongoing programs such as the San Joaquin River Management Program, the Grassland Bypass Project, wetland water supplies, DWR's real time water quality management program, and other San Joaquin River watershed activities are not addressed. Conversely, programs discussed such as out-of-valley disposal, evaporation ponds, land retirement, and others, while relevant to a portion of the San Joaquin River watershed, have historically and currently been primarily focused on areas that do not discharge salts to the River. This discussion should, at least, include the four ongoing programs mentioned above. (USDOI)

Reply: The actions discussed in this section are feasible alternatives for reducing or controlling salt loads entering the river. The Grassland Bypass Project and the wetland water supplies are not intended to address the salinity problem. DWR's real-time water quality management program and the San Joaquin River Management Program are described in section A.3.h of Chapter VIII.

Section A.3.a. Out-of-Valley Disposal

Comment: [page 15] Rewrite the first sentence of the out-of-valley disposal section as follows: "Implementation of in basin measures, if the only means used to reduce salt loading to the San Joaquin River, will be effective only for the short-term. A long-term solution must include disposal of salts outside of the valley, along with continuation of in basin measures as an ongoing means of reducing drainage volumes and salt and trace element loads. At present, the San Joaquin River..." (DWR)

Reply: Revisions made to text.

Section A.3.b. Water Conservation

Comment: [page 15] The actions taken by the Grassland Basin Drainers have already resulted in implementation of most of the requirements, and achieved the benefits in drainage reductions, from water conservation under these various statutes. Therefore, there will be minimal further benefit or available mitigation to be achieved through water conservation for most of the parties affected by the proposed in-field storage. (SLDMWA)

Reply: Comment noted.

Comment: [page 15] With the exception of the Exchange Contractors and the refuges, the remainder of the CVP contractors on the westside of the San Joaquin Valley do not have a full water supply. Therefore, agricultural water conservation in this area will do little to improve the salinity levels in the San Joaquin River. (WWD)

Reply: Water conservation has a limited potential to improve salinity conditions because conserved water may be used to irrigate nearby land. However, as mentioned by the commentor, water conservation by the Exchange Contractors could result in reduced deliveries. In addition, conserved water could be sold to urban areas outside the San Joaquin Basin.

Comment: [page 15] Water conservation will reduce salt loads applied to the soil, but it will also increase the concentration of salts in deep percolation water. The reuse of this more concentrated deep percolation water is problematic. In addition, the release of this water to surface watercourses will result in higher salt concentrations in the surface watercourses. (CDWA, SJRECWA)

Reply: This comment does not address the environmental effects of the project. Instead, it addresses a discussion of ongoing salinity control measures being implemented by entities other than the SWRCB. There are drawbacks associated with water conservation, but the benefits of water conservation outweigh the disadvantages. The long-term viability of irrigated agriculture in the San Joaquin Valley requires that a salt balance be maintained. Water conservation is an element of such a balance.

Water conservation activities may increase or decrease salt concentrations in receiving waters depending on the relative concentration and quantity of the saline source and the available dilution water.

Comment: [page 15] The conclusion that water conservation will improve salinity by leaving more water in the river for dilution flows and decreasing salt load imported into the basin is questionable. There is no indication that upstream users who begin conserving water will allow the conserved water to flow down stream rather then use it in other ways, sell it, or store it for later use. Similarly, conservation efforts on behalf of export interests only result in more concentrated salts eventually being discharged into the river and under no existing proposal result in any decreases of exports. Thus, the same amount of salt is being sent south but being concentrated before it reaches the river. Therefore, SDWA does not believe that the description in the DEIR about water conservation has any merit. (SDWA)

Reply: Water conservation has the potential to provide the benefits cited, but in practice these benefits may not occur for the reasons cited in the comment.

Comment: [page 17] The DEIR notes that SWRCB Resolution No. 89-88 directed the Central Valley RWQCB to issue waste discharge permits if drainage operation plans are not implemented in a timely fashion. Have any waste discharge permits been issued? (Stockton)

Reply: The comment does not address the environmental effects of the project. The Central Valley Regional Board issued waste discharge requirements for the Grasslands Bypass Project to control selenium loads to the San Joaquin River.

Comment: [page 17] The DEIR recounts the lengthy history of the CVRWQCB's attempts to control drainage on the San Joaquin River. In the first full paragraph on this page the admission is made that "The SWRCB at that time directed the CVRWQCB to issue waste discharge requirements if the drainage operation plans are not implemented in a timely fashion. The CVRWQCB has continued to pursue the drainage operation plan approach, and the main element of the plan has been water conservation efforts." The text should continue to explain the results of the CVRWQCB decision to "pursue the drainage operation plan approach" which is clearly illustrated in the discussion beginning at Page VIII-10. (SEWD)

Reply: As described in the text, the drainage operation plans identify water conservation as the principal best management practice for the control of subsurface drainage. While water conservation is an important element in establishing a salt balance in the San Joaquin Basin, short-term water quality improvements in the San Joaquin River are not expected with this approach because of the large accumulated salt load in the basin. In addition, water conservation can only improve the salt load balance if the water freed up by the conservation activities is not delivered to other parties in the basin, which is not presently the case.

Section A.3.c. Drainage Reuse

Comment: [page 17] The Drainage Operation Plans for the Grassland Basin Drainers, required by the Central Valley RWQCB, now have gone well beyond water conservation efforts. (SLDMWA)

Reply: Comment noted. The EIR states that water conservation is a principal element of the Drainage Operation Plans; other actions are also included in the plans.

Comment: [page 17] Drainage reuse is already being implemented by the Grassland Basin Drainers to some extent, and tailwater discharge into District systems is the general rule, with very limited exceptions. (SLDMWA)

Reply: Comment noted.

Section A.3.e. Subsurface Storage

Comment: [page 18] Add the following statement to the discussion of subsurface storage: "In dry years or a succession of dry years, additional water supplies may be needed for leaching and dilution of drainage in order to maintain soil quality and productivity. If additional water is unavailable, due to water supply conditions or changes in water rights allocations, and groundwater supplies must be used, additional negative impacts may occur." (DWR)

Reply: The recommended change was reworded and incorporated into the DEIR.

Comment: [page 18] The usefulness of subsurface storage is impacted as more and more efforts are made to recirculate, blend and reapply drainage water. Also the final paragraph of the section on Subsurface Storage basically underscores the severe limits on the practicality of this approach, while the description of the benefits is speculative. (SLDMWA)

Reply: As described in section B of Chapter VIII, drainage reuse is an alternative method for implementing a controlled drainage alternative; therefore, it should not be considered a limitation on the usefulness of the alternative. This alternative for salinity management in the San Joaquin River basin has not been implemented, and its benefits and drawbacks have not been proven.

Comment: [page 18] The report states that subsurface storage of drainage water "may have to be closely monitored". There is insufficient evidence to support the thesis that subsurface storage of drainage water will work as a long-term strategy for managing drainage loads to the San Joaquin River. Close monitoring will be required to evaluate the long-term changes in groundwater and soil chemical composition. (SJRECWA-1A)

Reply: Comment noted.

Section A.3.f. Change in Point of Diversion in the Delta

Comment: [page 18] The DEIR concludes that changing the point of diversion in the Delta will result in reduced salt load discharged to the San Joaquin River. First, such a change is many years away, if it ever occurs; second, the water that is discharged from tile lines is not the water that is applied to the surface. The salt reservoir already exists under tiled fields and is being pushed into the tiles by surface application and subsurface flow, which will take a long, long time to dilute. (SLDMWA)

Reply: Comment noted. SWRCB staff concurs that the effect of reduced importation of salt would take a long time to manifest itself in reduced loads the San Joaquin River. Nonetheless, long-term sustainability of agricultural productivity in the watershed requires maintenance of a salt balance.

Comment: [page 18] The DEIR's discussion of the Change in Point of Diversion in the Delta should include analysis of how long it will take before this alternative will produce benefits to the San Joaquin River. Even after it is implemented, it will take many more years for the "better quality diverted water" to have significant impact on San Joaquin River water quality, assuming continued irrigation and drainage of the land, because of stored accumulated salts in the valley. (WWD)

Reply: The DEIR does not analyze how long it would take for a change in point of diversion in the Delta to produce the benefit of reduced salinity in the San Joaquin River because this topic is under analysis through the CALFED Program. The expected improvement in salinity conditions in the San Joaquin River from this action will take many years to manifest itself for the reasons cited by the commentor.

Section A.3.g. Land Retirement

Comment: [page 19] The text should reflect that the Water Quality Common Program for CALFED also describes focused land retirement in areas with the greatest drainage problems. (DFG)

Reply: The text has been amended to incorporate the recommendation.

Comment: [page 19] The status of the DWR's Land Retirement Program needs to be updated to reflect the fact that the funds ($1,000,000) originally allocated to the interagency agreement with the Wildlife Conservation Board were redirected by the Resources Agency in late 1996 to the Department of Conservation for an unrelated program. While the DWR has the authority to implement such a program, no funds have been allocated to it, nor are any planned in the near future. Therefore, paragraph 5 and the bullets under this paragraph on VIII-19 should be deleted. In addition, the focus of the USBR land retirement program is drainage reduction; protection, restoration and enhancement of fish and wildlife resources; and water acquisition to meet CVPIA obligations. The primary focus of the DWR land retirement program is on reducing selenium in subsurface drainage. Neither program has the primary objective of salinity management, especially as it relates to the San Joaquin River. In fact, the majority of lands identified in the San Joaquin Valley Drainage Report, as "Problem Lands for Retirement" do not drain to the San Joaquin River. Therefore, consideration by the SWRCB of land retirement as a potential means of salinity management may not be duplicative. (DWR)

Reply: The land retirement description has been updated. The state legislature has chosen DWR to lead the state's efforts regarding land retirement, and any SWRCB effort in this area would be duplicative.

Comment: [page 19] In terms of land retirement, how was the total acreage to be funded determined? How much of the gained water can be used to mitigate this project? (SJRECWA-1A)

Reply: The land retirement section in the DEIR has been revised. The acres to be purchased will depend upon funding and environmental constraints.

Comment: [page 19] The CVPIA authorization for land retirement is misstated. The land retirement authorization in CVPIA Section 3408 (h) does not specify a dollar amount to be spent, an amount of acreage to be retired, or the fate of water associated with retired lands. (USDOI)

Reply: The land retirement program description in the DEIR has been revised.

Comment: [page 19] The Grassland Basin Drainers generally oppose land retirement as a drainage management alternative because of their success to date in improving drainage management, their development of alternate land management programs, and the high productivity of their land. Westlands Water District, on the other hand, supports land retirement for a limited quantity of land, so long as the water supply remains available to lands within the District. In both cases, it is not clear that retirement of land will help control movement of salts to the river, especially if the impacted land no longer produces a revenue stream to deal with management of drainage and/or any environmental impacts. (SLDMWA)

Reply: Comment noted. The benefit of land retirement as a drainage management alternative is dependent on numerous factors.

Comment: [page 19] The discussion of land retirement for water quality needs to be updated to reflect the continued lack of progress in implementing either the USBR program under the CVPIA or the DWR program under Water Code section 14900. Was funding for the $1 million interagency agreement between DWR and the Wildlife Conservation Board actually provided and what was the result of this effort?

CCWD asks the SWRCB to provide as much help, incentives and encouragement as possible to USBR and DWR to get these [Land Retirement] programs off the ground. Retirement of drainage problem lands will greatly improve water quality in the San Joaquin River and the Delta. (CCWD)

Reply: The discussion regarding land retirement has been updated.

Comment: [page 19] The only way land retirement will help the water quality of the San Joaquin River is to specifically retire land that contributes subsurface drainage water to the river and then plug the drainage systems as was done in Westlands. (WWD)

Reply: Comment noted. Even the proposed actions may not improve water quality in the San Joaquin River over the long-term if the water freed up by land retirement is applied to land that contributes to the salinity problem in the river.

Section A.3.h. Controlled Discharges to the San Joaquin River

Comment: [page 19] The statement is made that: "The SWRCB's 1991 Bay/Delta Plan and 1995 Bay/Delta Plan directed the Central Valley RWQCB to implement a program to reduce the annual salt load discharged to the San Joaquin River by at least 10 percent and to adjust the timing of salt discharges from low flow to high flow periods." The text does not continue with a statement that this has not been achieved. (SEWD)

Reply: The Central Valley RWQCB has a continuing effort to reduce pollution to the San Joaquin River. The determination that a quantifiable salt load reduction has been achieved is problematic because of the large annual variability in the salt load; therefore, many years of data may be needed before such a determination can be made.

Comment: [page 20] The text excludes additional items of history, which include direction by the SWRCB to the Central Valley RWQCB in 1995 to complete within three years a basin planning process to adopt and implement salinity objectives [at] upstream location[s] on the San Joaquin River. At the end of that three years, the Central Valley RWQCB has only noticed a basin planning process which few have any faith will result in adoption of the needed objectives. (SEWD)

Reply: This comment does not address the environmental effects of the project. The present schedule of the Central Valley RWQCB calls for adoption of salinity objectives for the San Joaquin River before the end of the year.

Comment: [page 20] The DFG recommends that a preferred alternative avoid interference with public and private wetlands management and impacts to habitat availability and quality. Timed

releases need to avoid impacts to the various races of salmon, particularly San Joaquin fall-run chinook salmon and Sacramento spring-run and winter-run chinook salmon. Releases of highly saline agricultural drain water should be avoided during April through June. This component of the alternative should be subject to adaptive management so the required adjustments can be made. (DFG)

Reply: Comment noted.

Comment: [page 20] Future versions of the DEIR should consider groundwater pumping as a strategy for reducing drain loads to the San Joaquin River during critical periods as there is substantial evidence that groundwater pumping can reduce drainage volumes. The San Joaquin Valley Drainage Program (1990) recommended groundwater pumping from the semiconfined zone as a strategy for lowering the water table and reducing drainage volumes and loads in the western San Joaquin Valley. The results of using a regional groundwater flow model described in Belitz and Phillips (1992) indicate that drainage volumes can be reduced substantially by pumping from the semiconfined and confined aquifers in the western San Joaquin Valley. Pumping from the shallow (within 50 feet of land surface) semiconfined zone and/or from deeper zones will lower the water table and reduce drainage volumes. Discharge of pumped groundwater to the San Joaquin River during times of high assimilative capacity could lower the water table sufficiently to create groundwater storage for periods when there is little or no assimilative capacity in the river. This will reduce drainage volumes and loads to the river during periods when there is little or no assimilative capacity in the San Joaquin River. Implementation of this strategy will require real time monitoring of flow and salt concentrations in the San Joaquin River and quantitative regional analysis of the groundwater flow system. (SJRECWA-1A)

Reply: Groundwater pumping is one of the possible ways to maximize the use of the assimilative capacity of the river. As described in section B of Chapter VIII, different methods are available to control releases to the San Joaquin River for the purpose of maximizing the assimilative capacity, including drainage reuse, evaporation pond storage and subsurface storage. In this programmatic analysis, only one of the possible implementation alternatives is analyzed (Salinity Control Alternative 3) in order to illustrate the possible utility of the general approach. Other implementation alternatives should be evaluated in any subsequent project level analysis.

Section B. SALINITY CONTROL ALTERNATIVES UNDER CONSIDERATION

Comment: The salinity control alternatives fail to meet the purpose of the project. These alternatives are limited to considering controlled timing of saline discharges through regulated discharge. By so narrowing the alternatives to be evaluated, these alternatives fail to meet the project purpose of "equitably distributing" the allocation of responsibility. The DEIR acknowledges that San Joaquin River salinity impacts are caused by low flows, by diversion of higher quality San Joaquin River water into the Tulare Lake Basin, by eastside tributaries, and by extensive water development. Yet the sole purpose of this evaluation is to determine the amount of flows that could be saved if only one group--dischargers of agricultural subsurface drainage--were subjected to regulation so stringent that they likely could not remain in production. (SLDMWA)

Reply: Comment noted. Presently, the USBR is solely responsible for diluting salinity in the lower San Joaquin River because of the impact of its operations in the San Joaquin Basin. This responsibility is maintained in all of the Flow Alternatives analyzed in the DEIR. The issue being evaluated in Chapter VIII is whether there are any other reasonable actions that can be taken by other

parties that contribute to the salinity problem in the river. Presently, saline agricultural drainage negatively affects the quantity and quality of water available to downstream parties. These parties believe that the present situation is inequitable to them and that the dischargers of the saline drainage should be responsible for controlling the effects of their actions. The SWRCB will consider the equity of the alternative actions when it prepares a water right decision.

Comment: [page 20] The DEIR should be revised to include analysis of the use of a Waste Discharge Requirements (WDR) to control salt discharge into the San Joaquin River. A requirement should also be established to establish legally accountable regional management groups in order to limit the total number of WDRs. Implementation mechanisms that should be considered include the optimum mix of input pricing (such as tiered water pricing), tradable discharge permits, participation in land retirement programs, and similar economic mechanisms. The financial analysis of this option should recognize that using less water costs less money, and the resulting savings would defray the expense of drainage reduction. (EDF, SEWD, Stockton)

Reply: The issue requiring analysis in the DEIR is not whether the CVRWQCB has authority to regulate agricultural discharges - it does. The issue is what feasible, physical methods are available to reduce salt loads to the San Joaquin River. If the CVRWQCB elects to exercise its regulatory authority to control saline discharges from agricultural discharges, the methods described in the DEIR are the alternatives available to achieve this control. The feasibility and effects of these physical implementation effects should be evaluated.

The SWRCB's authority to mandate specific economic mechanisms to achieve water quality objectives is limited.

Comment: [page 21] The alternative scenarios chosen of controlled wetland and agricultural discharges could have been formulated differently and may have produced different conclusions if other, perhaps more realistic, assumptions had been chosen. Hence, if the SWRCB elects to direct the Central Valley RWQCB to evaluate controlled releases in more detail, it should be with the widest latitude possible for the Central Valley RWQCB to formulate reasonable salinity management methods. (USDOI)

Reply: Comment noted. Although realistic assumptions were used in the modeling, alternative reasonable assumptions are available. Also, as described in the DEIR, real time control of wetland and tile drain discharges is most likely to provide maximum benefit with the least negative impact. There is no intent to restrict the range of the Central Valley RWQCB analysis in this process.

Section B.1. Salinity Control Alternative One-Reference Case

Comment: [page 21] Alternative 1, providing dilution flows, will not achieve the intended objectives. (DFG)

Reply: Comment noted. The use of New Melones dilution water to improve salinity conditions in the San Joaquin River will not have any effect on salinity conditions in the river upstream of its confluence with the Stanislaus River. Modeling indicates that there may be adequate dilution water available from New Melones Reservoir to achieve the Vernalis salinity objective under most hydrologic conditions depending on the priority of releases for dilution in comparison to other demands on the reservoir.

Section B.1.a. Grassland Area Wetlands

Comment: [page 22] Wetland managers are holding water longer and releasing it more gradually in order to promote more productive habitat. The change in practices stems from a shift in emphasis, by wetland managers, from livestock grazing to wetland management designed to promote productive habitat. Recent research has demonstrated numerous benefits wildlife receive from holding water longer: (GWD)

Reply: Comment noted. Salinity Control Alternative 2 shifts March and April releases to February but calls for additional water supplies in March and April to maintain a flow-through system in the wetlands.

Comment: [page 22] The average salinity levels of 1900, 960, and 600 mg/l assumed for historical wetland releases, CVPIA water, and additional CVPIA water, respectively, are not verified and appear to be on the high side. The SWRCB should not use these high levels in conjunction with CVPIA supplies unless explained. (USDOI, GWD, SDWA, SL&DMWA)

Reply: The bases for the assumptions are referenced in the text. As described in the reference, the salinity assumptions are likely higher than the actual salinity of the wetland discharges. The intent was to represent the worst case conditions that would be present during dry periods.

Comment: [page 22] TDS released from southern GWD wetlands may have been exacerbated by the use of agricultural drain water to flood wetlands prior to 1985. Salt loading to the ponds probably was greatest when the ponds received subsurface agricultural drainage as a portion of the supply water prior to 1985. The soluble salts that remain in the soil from that time are now leached with naturally occurring salts during the winter and add to the salt loading of the wetland release. Nowhere in the text is this mentioned (GWD)

Reply: The DEIR states in section B.1.a of Chapter VIII that prior to 1985 substantial quantities of agricultural drainage were applied to the Grassland's wetlands. Some of the salts presently being leached from the soils in the wetlands no doubt originated from this source. The DEIR does not attempt to quantify the original source of salts in the wetlands; therefore, no change in the DEIR is warranted.

Comment: [page 22] There is no explanation of why there is no long-term benefit from wetland flow restrictions. This is intuitively inconsistent with the application of increased supplies to those habitats. Given the increases in supplies to these areas and the lack of controls of discharges (as compared to the agricultural drainers), any actions to manage San Joaquin River salinity must take them into account. For example, federal and local policies for conservation practices are under development and requiring such policies would be appropriate for inclusion in the Basin Plan, as well as further study of timed discharges as more data about water quality and refuge management practices becomes available. The superficiality of this review and the failure to recommend further study by the RWQCB demonstrates that this is not truly a programmatic EIR and that there is no real effort to equitably allocate responsibility for San Joaquin River salinity objectives. (SLDMWA)

Reply: The lack of benefit of wetland reoperation is principally because the range of possible alternatives is limited by the need to encourage appropriate plant growth. The DEIR acknowledges that some benefits may be possible with other alternatives. The purpose of Chapter VIII is to provide

the SWRCB with information needed to determine whether it should advise the Central Valley RWQCB to further evaluate reoperation alternatives. A preferred alternative is not identified in the DEIR.

Comment: [page 22] Moist soil plants begin germinating in mid March and continue through late May. Wetland drawdowns are timed to maximize plant diversity as well as link germination with optimal soil moisture conditions. February drawdown would negatively impact both of these objectives and create the need for more irrigation on the wildlife areas from mid-March to May in order to maintain wetland plant production. (DFG)

Reply: Comment noted. This problem is identified in the DEIR. Early releases of stored water are replaced by 10,000 acre-feet per month in March and April to minimize this adverse effect.

Comment: [page 22] The name "Volta Wildlife Management Area" should be changed to " the Salt Slough Unit of North Grasslands Wildlife Management Area". (GWD)

Reply: The change has been made as suggested.

Section B.1.b. Agricultural Drainage

Comment: [page 23] SDWA has already discussed the coordination of drainage with various agricultural entities and will report on those activities to the SWRCB. At the current time, a significant amount of the subject drainage can be controlled without any further cost and additional significant amounts can be controlled with minor costs. (SDWA)

Reply: Comment noted.

Comment: [page 23] Both the text and Table VIII-4 state that tile discharge via Mud and Salt Sloughs is 19,145 AF per year. This is underestimated. In Water Years 1996 and 1996, the annual amounts were 58,000 AF and 53,000 AF, respectively. In Water Year 1997, the first year of operation of the Grassland Bypass Project, the discharge was approximately 36,000 AF. Many conservation measures, including elimination of most tail water, had already been implemented in WY 1997. Even if the 19,145 is intended to describe tile water only, it appears to be a low number, and further, flows from seepage and gravity discharges are significant and cannot be eliminated. (SLDMWA)

Reply: The DEIR identifies the estimated 19,145 AF as tile drain water only. The modeling accounts for other water sources in Mud and Salt sloughs.

Comment: [page 23] The value of 19,145 acre-feet should be rounded off, as it isn't accurate to five significant figures. This comment is applicable to other parts of the DEIR and related documents. (SJRECWA-1A)

Reply: The estimate of the average annual agricultural drainage from Mud and Salt sloughs of 19,145 acre-feet is not accurate to five figures. The suggested change, however, will result in a

different set of numbers in the text and the modeling. Such a difference may be confusing and in any event will not affect the conclusions in the report.

Section B.2. Salinity Control Alternative 2 – Controlled Timing of Wetland Releases

Comment: [page 25] Under Salinity Control Alternative 2, it is not clear why shifts in release are made from March and April to February. Releases in May should also be restricted because the objectives are 0.7 mmhos/cm in April through August but only 1.0 mmhos/cm in September through March. (DFG)

Reply: Historically, March and April exceedance of salinity objectives have been problematic because the salt sensitive crop germination phase can be occurring. Under Bay/Delta Plan conditions, salinity conditions are expected to be good from April 15 through May 15 because of the pulse flow requirement. The SJRIO model was not able to adequately incorporate this effect because of its monthly time step. Under real-time conditions, wetland release could be limited for 45 days in March and the first half of April and releases could begin again during the pulse flow. Other operational alternatives are also possible.

Comment: [page 25] Shifting all wetland releases to February is not consistent with the needs of wildlife and does not mimic the historic (Pre-CVP) flooding regime; therefore, it is not an option for GWD wetlands. Some wetland releases may be shifted to February if refilling can occur and further research demonstrates wildlife will not be adversely affected. (GWD, DFG)

Reply: The alternative calls for provision of 20 TAF of water to maintain the wetland environment after releases in February. Additional project-level analysis will be required prior to implementation of a wetland management plan as described in the DEIR.

Comment: [page 25] The last sentence beginning on this page states that "This program is implemented whenever the salinity objectives at Vernalis during the month of March are likely to be exceeded." With or without New Melones flows? (SEWD)

Reply: The proposed program is implemented whenever the salinity objectives at Vernalis during the month of March are likely to be exceeded without release of dilution water from New Melones Reservoir.

Comment: [page 25] The salinity control alternatives each reference the Central Valley RWQCB implementing "a regulatory program" or coordinating a "cooperative program" in which the timing of wetland releases is changed. Really, this is two different alternatives. The DEIR assumes that the result of a regulatory program and a cooperative (or volunteer) program would be the same. This is obviously not true, and the differences between the two scenarios must be evaluated so that a determination can be made regarding the more effective alternative. (SEWD)

Reply: The environmental effects of the proposed actions are the same regardless of whether they are initiated through a regulatory process or a voluntary process.

Comment: [page 25] Alternatives 2 and 4 call for the use of water authorized under CVPIA for full habitat development on Central Valley Refuge and Wetland Areas [Section 3406(d)(2)] or Level 4 to provide a flow through system to avoid impacts resulting from shifting wetland releases to February. The DEIR indicates that the impacts are said to occur to waterfowl food production capabilities of the wetlands. It should be noted that impacts also will occur to wetland-dependent wildlife reproduction which occurs from early March into June. In addition, the use of Level 4 water supplies is to enhance wetland management capabilities to improve habitat conditions. The use of 20 TAF in March and April could impact effective use of these water supplies for the full benefit of wetlands and wildlife resources. The DEIR should evaluate these potential impacts.

It should be noted that the most desirable timing for moist soil food production calls for de-watering wetland units beginning in March. This coincides with germination of the most desirable plant species. This drawdown is then followed by an irrigation 30-45 days later to stimulate growth and seed production. By maximizing releases in February, germination of either less desirable or undesirable plants will reduce food availability for fall and winter waterfowl and other migratory bird populations, and increase maintenance requirements and possibly water use on the impacted wetland areas. In summary, the alternatives and their impacts need to be fully addressed in the DEIR. (USDOI)

Reply: An adequate programmatic level analysis was completed in the DEIR. The only action the SWRCB would take in this matter would be to advise the Central Valley RWQCB to further analyze the alternative at the project level. The issues raised in this comment would be addressed during that review.

Comment: [page 25] Salinity Control Alternative 2 apparently shifts all but 10 TAF of the March and April wetland release to the month of February and assumes that this release has a TDS concentration of 1900 mg/l. It also assumes that the "CVPIA water" has a TDS concentration of 960 mg/l and "additional CVPIA water" has a concentration of 600 mg/l. The distinction between these two terms is unclear. Although the scenario is simplistic, perhaps to demonstrate the intent of the action more clearly, the 1900 mg/l wetland drainage salt concentration should not be applied to the reoperated wetland discharges of 43 TAF. February salinity concentrations in wetland discharges may be less than 50% of the average April salinity concentrations. USBR suggests that this scenario be more completely explained. (USDOI)

Reply: The total wetland release under the reference condition is assumed to be 43 TAF in February through March. The wetland release consists of a combination of "historic" quality water (16 TAF at 1,900 mg/l) and "CVPIA" quality water (27 TAF at 960 mg/l). The salinity of the wetland release is assumed to be approximately 1,310 mg/l. For the reoperation alternative, this wetland release is made in February and a 10 TAF release of "additional CVPIA water" is made in March and another 10 TAF release is made in April.

Comment: [page 26] It is not clear how providing 10 TAF in March and April offsets impacts to managed wetlands and waterfowl. This should be clarified in the FEIR. (DFG)

Reply: In section B.1.a of Chapter 8, the text states that releases of wetland water may be timed to encourage specific plant species. Releasing water earlier in the year will change the type of waterfowl food that grows in the wetlands. Providing fresh water later in the season will allow wetland managers to encourage a more diverse assemblage of waterfowl food sources. This statement has been incorporated into the DEIR.

Comment: [page 26] The assumption should not be made in the DEIR that 20 TAF of Level 4 water will be available to maintain a flow-through system in the wetlands. Since the advent of the CVPIA, the USBR and the USFWS have required wetland managers to limit the scheduling of Level 4 water to the fall and winter months only. (GWD, DFG)

Reply: Comment noted. The concurrence of the USBR and the USFWS may be desirable before implementing this alternative.

Comment: [page 26] The proposed methodology for drainage system reoperation does not account for the regional nature of the groundwater flow system. Implementation of the controlled drainage methodology assumes that the hydraulic controls on groundwater and changes in groundwater quality in any field are solely the result of activities in that field. Flow entering the tile drains may be controlled by the regional hydraulic system rather than field controls. Consequently, the implementation of reoperation of the drainage systems or other methods to equitably reduce salt loading to the San Joaquin River needs to based on a regional analysis of the groundwater flow system. Under the proposed drainage system reoperation, the upslope hydraulic influences will cause water logging and salt accumulation to occur in drained areas closer to the valley axis which will prevent future viable agricultural operations. (SJRECWA-1A)

Reply: The analysis is based on the assumption that there is some short-term storage capacity available in the soil column; it does not assume that the regional groundwater flow system has little or no influence on drainwater quantity or quality. The analysis of drainage reoperation in the EIR is programmatic. The effect of the regional groundwater flow system on the feasibility of the project and the allocation of responsibility to implement the project will be evaluated during a project-level review, if appropriate.

Comment: [page 26] The proposed methodology for drainage system reoperation does not account for the regional nature of the groundwater flow system and does not contribute to the equitable distribution of the responsibility (objective 6 of the DEIR) of meeting the water-quality objectives in the 1995 Bay/Delta Plan because some fields will store more than their share of the drainage water. Implementation of the controlled drainage methodology assumes that the hydraulic controls on groundwater and changes in groundwater quality in any field are solely the result of activities in that field. However, studies by the USGS shows that groundwater flow to drains is influenced by regional hydraulic controls and the most saline groundwater can flow to drains from upgradient fields. Thus, fields closest to the valley axis will store more drainage water than upslope areas. Areas without drainage systems will be subject to water logging and excessive salinization. As required by CEQA, the DEIR should fully describe mitigation measures including monitoring and mitigation of groundwater and soil salinization that may result from implementation of this alternative. (SJRECWA-1A)

Reply: Studies have shown that the regional groundwater flow system controls much of the flow of groundwater to drain laterals and contributes to water logging and excessive salinization on downslope lands. Determining the degree of responsibility of upslope parties due to hydraulic forces is problematic. Notwithstanding this issue, some parties may believe that the salinity control alternative proposed in the DEIR is much more equitable than the present situation where discharge of agricultural drainage water adversely affects the quality and quantity of water available to downstream parties. Regarding the mitigation issue, the SWRCB does not believe that it is required to mitigate actions it takes to control pollution of surface water unless the pollution control actions adversely affect a third party not responsible for the pollution. Parties do not have a right to pollute.

Comment: [page 26] It is not clear where the numbers used in Table VIII-5 originated. Also, the rationale for the 10,000 AF in each month (March and April) is unclear. The DEIR should clarify the source and rationale for these numbers. (USDOI)

Reply: The source of the numbers in Table VIII-5 was identified in Table VIII-3 and the text of page VIII-26. The rationale for the 10 TAF of deliveries in March and April is that they provide a fresh water source to the wetlands to reduce the effect of draining the wetlands earlier in the year than would have occurred without the project.

Section B.3. Salinity Control Alternative 3 – Controlled Timing of Tile Drain Discharges

Comment: [page 26] There is no reason that the Central Valley RWQCB cannot voluntarily consider any useful aspects of the concept of storing tile water for regulated discharge as part of its broader implementation of salinity objectives for the San Joaquin River. (SLDMWA)

Reply: Comment noted. The Central Valley RWQCB can voluntarily consider the alternatives in the DEIR as part of its implementation of salinity objectives for the San Joaquin River.

Comment: [page 26] Controlled timing of drainage releases as proposed in the report cannot be reasonably implemented under the current analytical strategy in which exceedance of the salinity objective in any month requires storage of drainwater for three months. Real time data collection and analysis to determine timing of releases is essential if this program is to be implemented. (SJRECWA, SL&DMWA)

Reply: Salinity Control Alternative 3 - controlled timing of tile drain releases - requires storage of tile drain discharges during periods when its release would result in exceedance of salinity objectives at Vernalis. The alternative description provides a simplified modeling protocol for this alternative. The modeling protocol does not exactly capture the logic that will be used in implementing the alternative. The alternative description further states that actual implementation of this alternative would probably be based on real-time data and operations. The description of the alternative has been modified to more accurately describe the alternative.

Comment: [page 26] The proposal estimates that 6400 AF of subsurface drainage would need to be stored in the field in the January-March period. Based on the Grassland Basin Drainers information, the number would be at least double that amount, or 12,800 feet. Further, the proposal oversimplifies the storage concept. Most of the drained area is steep, not flat. To store 12,800 AF, assuming 50,000 tiled acres and an 8% storage coefficient, a 3.2 foot rise in the groundwater level over the entire area would be required. Even with modifications to the drainage systems, the lower elevation fields would become water logged if the water elevation in the upper elevation fields had to be raised. Also, our ability to store such significant quantities of water assumes that the soil profile is dry and could be used for tile storage only, whereas in many years, the soil profile in large areas is fully saturated from rainfall; in other years, January-March is the primary time for meeting crop pre-irrigation requirements and the time when irrigation water for that purpose is available. These problems and inconsistencies are at least as significant as the problems with timed discharges for wetlands because of spring irrigation requirements. The timing problems were a significant reason for dropping timed discharges from wetlands from further consideration. (SLDMWA)

Reply: The alternative assumes limited releases may be necessary during periods of curtailed discharges in order to avoid waterlogging and to maintain agricultural productivity. In the mid-1980s the tile drainage system in the Westlands Water District was completely sealed, but agricultural productivity has been maintained. This result implies that at least in some areas elimination of surface discharges for limited times is feasible.

Comment: [page 26] The CVRWQCB staff is concerned that storing tile drainage for three months may not be economically and physically feasible, may affect soil productivity, and may conflict with its efforts to regulate monthly selenium load limits. Development of a real-time management alternative with shorter periods of holding would be more feasible. (CVRWQCB)

Reply: These concerns and suggestions need to be addressed prior to implementation of this alternative. The purpose of the programmatic analysis was to determine whether there was any water supply benefit to the proposed project. If appropriate, the CVRWQCB will conduct a project-level analysis of the alternative and will develop permutations of the alternative.

Comment: [page 27] Land retirement and tile construction will have fairly large effects on plants and animals and these effects should be evaluated. (USDOI)

Reply: Land retirement is not an alternative in the DEIR, and substantial land retirement is not expected if tile drain reoperation is implemented. The environmental impacts for tile construction are discussed in section C.4 of Chapter VIII. Further evaluation, if needed, will be done by the CVRWQCB during a project-level analysis.

Comment: [page 27] The implementation of the proposed reoperation of drainage systems will result in higher groundwater and soil concentrations of selenium, boron, molybdenum and salt. This is due to increased evapoconcentration from the shallow water table during storage of shallow groundwater in the summer when there is high evapotranspiration. Additional analysis and data is needed to assess the impacts of reoperation of drainage systems on groundwater and soil salinity. (SJRECWA-1A)

Reply: Comment noted. Additional analysis of this issue may be needed prior to implementation of the alternative.

Section C.1. ENVIRONMENTAL IMPACTS OF IMPLEMENTING SALINITY CONTROL ALTERNATIVES, Description of Modeling Process

Comment: [page 28] The SWRCB should not assume full implementation of the 1995 Bay/Delta Plan and evaluate the salinity control alternatives as compared to all of the flow alternatives. The SWRCB has effectively eliminated one of its alternatives from further consideration without explanation. (SJRG)

Reply: This approach is reasonable for a programmatic-level analysis. The differences in the flows among the alternatives is limited. The approach is not intended to eliminate any of the alternatives.

Comment: [page 28] Explanation and definition is needed for the statement that "New Melones Reservoir is operated to meet instream flow and contractual obligations." (SEWD)

Reply: The text has been amended to refer the reader to Chapter IV where DWRSIM modeling assumptions are described.

Comment: [page 28] The modeling process described is not one that has had any opportunity for peer review or evaluation by other experts. The DEIR indicates that SJRIO over-estimates required releases, compared to DWRSIM, and that it over-states the number of months releases are required, compared to DWRSIM. The modeling results appear to be very preliminary, yet the conclusion that 21 TAF in New Melones releases could be saved by regulated discharge drives this entire proposal. Certainly a great deal more evaluation of the modeling validity needs to be done before it can be concluded what the proposed regulation of discharges will achieve. The same is true of the conclusion that there is no benefit from regulating discharges from the wetlands. Further refinement of the models, evaluation of a broad range of salinity control measures, and consideration of the costs and benefits of each would be appropriate tasks for the Central Valley RWQCB in its Basin Planning process. (SLDMWA)

Reply: SJRIO has been reviewed by a number of parties conducting modeling in the Central Valley. The DEIR does not reach any conclusions regarding the relative accuracy of SJRIO and DWRSIM; instead, the DEIR documents the difference in the results between the two models. Further analysis is required prior to implementation of the alternatives.

Comment: [page 28] The DEIR notes that there are no EC objectives in the San Joaquin River upstream of Vernalis. The Central Valley RWQCB should be directed to determine appropriate EC objectives to protect beneficial uses at points upstream of Vernalis, downstream of each major tributary. (Stockton)

Reply: This comment does not address the environmental effects of the proposed project. The establishment of salinity objectives in the San Joaquin River basin upstream of Vernalis is a separate action by the Central Valley RWQCB and is not a subject of the current Bay/Delta proceeding. In any case, the Central Valley RWQCB is presently developing EC objectives upstream of Vernalis.

Section C.2. Reduction in Required Releases from New Melones Reservoir

Comment: [page 29] The DFG recommends that a preferred alternative include the following considerations. Begin, on a small scale, with the temporary storage of highly saline drainage water in the Grasslands. Stored water should be carefully metered out in the December through March period coincident with high, uncontrolled flows above a threshold level that would be specified in the Basin Plan or, in the absence of that, agreed upon by all the stakeholders through the CALFED Ops Group process. (DFG)

Reply: Comment noted.

Comment: [page 30] The report does not quantify the level of significance for reduction of dilution water releases. For example, are the water savings in Table VIII-7 for different alternatives significant or within the modeling errors? Future consideration of alternatives should present an

analysis of the level of significance that is based on modeling and measurement error and apply it to long term averages and hydrologic extremes. (SJRECWA-1A)

Reply: Comment noted. In general, the model results are intended to provide a comparative analysis among the alternatives and not an absolute prediction of the quantity of dilution water required. The model results discussed in the DEIR indicate that there can be water savings and improved water quality with reoperation of tile drainage. Prior to implementation, the Central Valley RWQCB would do additional model studies to define more explicitly the impact of specific measures.

Comment: [page 30] The units for the values in Table VIII-7 without percentages were not provided. This is a very difficult table to understand. (SJRECWA-1A)

Reply: The units (thousand acre-feet) have been added to Table VIII-7

Section C.3. San Joaquin River EC

Comment: [page 31] The modeling performed assumes that Stanislaus River water is available at all times to meet the Vernalis objective. Such an assumption simply results in modeling results of questionable use. USBR operations show us it will not budget adequate amounts. (SDWA)

Reply: The analysis estimates the reduction in salinity control releases that could be achieved through implementation of the salinity control alternatives, as modeled, when New Melones Reservoir is operated to meet the salinity objective at Vernalis. An alternative method of analysis would be to show the change in EC at Vernalis under some assumed New Melones Reservoir operation. The benefits under the former method of analysis are more understandable and quantifiable.

Comment: [page 31] The statement is made that: "There are no EC objectives on the San Joaquin River upstream of Vernalis, and there are no requirements to provide dilution water on the San Joaquin River upstream of its confluence with the Stanislaus River. Comparison of the EC at Crows Landing with the EC objectives at Vernalis indicates that, if the Vernalis objectives were adopted at Crows Landing, they would seldom be achieved." The import of this statement is not explained. Perhaps they would be achieved if an implementation plan were adopted along with objectives. (SEWD)

Reply: Comment noted. The statement was intended to highlight the poor salinity conditions at Crow's Landing in comparison to the salinity conditions at Vernalis. The better salinity conditions at Vernalis are achieved by provision of dilution flows but those flows enter the San Joaquin River at a downstream location and result in improved conditions for only a small portion of the river.

Comment: [page 31] The DEIR does not address all of the water quality issues in the San Joaquin River. Specifically, selenium, boron and molybdenum are constituents of concern in the San Joaquin River and Mud and Salt Sloughs that are not addressed by the EIR. Water quality objectives for these constituents are specified in the 1995 Bay/Delta Plan for the Sacramento River and San Joaquin River Basins. The question as to how the concentrations of these constituents in the San Joaquin River will be affected by the implementation of the proposed alternatives needs to be answered. (SJRECWA-1A)

Reply: The DEIR analyzes implementation of the Vernalis salinity objective at a programmatic level. Maximizing the use of the assimilative capacity of the river for salinity being discharged from tile drains should improve conditions in the river with respect to the concentration of other pollutants in tile drainage. The Central Valley RWQCB will analyze this issue if it undertakes a project level analysis of the alternatives.

Comment: [page 31] Part 4. The title "construction related effects" should be revised, as it doesn't clearly describe what is discussed in this part. (SJRECWA-1A)

Reply: The principal purpose of this section is to evaluate whether retrofitting an existing drainage system or installing a new controlled drainage system will have construction-related environmental effects. Therefore, the section is appropriately titled.

Comment: [page 31] The report describes the implementation of controlled tile drainage release. There are two problems with the proposed regional implementation of this management practice and the current level of analysis. First, the effects on groundwater and soil salinity have not been sufficiently evaluated. The study of drainage system operation by Ayars and others (1996) cited in the DEIR assessed the changes in groundwater salinity during one year in a single field in the Grasslands Subarea and concluded that the "quality of the drain water from these sites would not change significantly as a result of the imposed management (controlled drainage)". One year is insufficient to assess changes in groundwater salinity. Also, the salt balance and effects on groundwater quality need to be examined in a regional context. (SJRECWA-1A)

Reply: The programmatic-level analysis in the EIR is adequate. If necessary, the Central Valley RWQCB may collect or require the collection of additional information when it conducts a project-level analysis.

Comment: [page 32] In Figure VIII-11, the average differences in EC at Vernalis are mostly within measurement error of 2 to 5 percent for EC. Therefore, the estimated differences in EC as the result of implementation are similar in magnitude to the measurement error most of the year. Future analysis should determine the level of significance associated with these estimates and ask the question: "Given the range of estimates, should this alternative be implemented?" The answer to this question appears to be that the uncertainty is too high to insure a reasonable level of success of the alternative. (SJRECWA-1A)

Reply: Figure VIII-11 compares the monthly average EC at Vernalis over 73 years of hydrology after New Melones Reservoir releases. As expected, the table shows little difference in EC between the alternatives except in September and October when tile drainage stored over the summer is released to the river. The monthly average EC at Vernalis is expected to be similar between the alternatives because the salinity is controlled at Vernalis through New Melones releases and because of the long averaging period. The benefit of the tile drain reoperation alternative is measured not by changes in Vernalis EC but by reduction in the amount of dilution water released from New Melones Reservoir. This information is provided in Table VIII-7 which shows that the average annual reduction in dilution water releases under the tile drain reoperation alternative is 21 TAF.

Comment: [page 32] The use of different scales on the two tables on this page may lead the less careful reader to conclude that the EC at Vernalis and the EC at Crows Landing are roughly

comparable, when in fact the EC levels at Crow's Landing are two or more times higher than those at Vernalis. For ease of comparison, the two tables should be on the same scale. (Stockton)

Reply: The Vernalis salinity objectives are provided on both tables, and these objectives provide a common frame of reference.

Comment: [page 33] Figures VIII-13 and 14 demonstrate almost negligible changes in water quality at Vernalis or Crows Landing from implementation of the proposed project over the reference case. What evidence is there anywhere in the DEIR that supports selection of this particular alternative as a potential mandate for action by the RWQCB? (SLDMWA)

Reply: The purpose of the analysis is to determine whether tile drain or wetland reoperation would significantly reduce the quantity of required dilution water releases from New Melones Reservoir. The quantities of conserved water are identified in Table VIII-7, and they show that wetland reoperation provides little water conservation while tile drain reoperation conserves an average of 21 TAF per year. Figures VIII-11 through VIII-14 document the resulting EC at two location in the San Joaquin River as a result of this project. The change in EC conditions at these locations is provided as part of the environmental documentation of the project; these figures are not provided to support selection of a particular alternative.

Comment: [page 34] Figure VIII-15 oversimplifies in-field conditions. The water level must be raised 3.2 feet uniformly, and the area targeted for regulation slopes steeply. The analysis also neglects the fact that water moves through the soil and will bypass the DOS-IR valves installed to allow storage regulation. Also, there is currently an inconsistency between this proposal and the existing Basin Plan, which precludes construction of new tile systems that discharge. The San Joaquin Valley Drainage Program does, however, identify that additional acres will require tile systems. How will this program work when drained lands double? (SLDMWA)

Reply: Figure VIII-15 is a conceptual diagram of a controlled drainage system. The diagram was copied from the referenced USBR publication which described a pilot project for this type of drainage system. Groundwater flow rates are extremely slow in the drainage problem area; therefore, water flow through the soil is unlikely to be a problem.

There is no inconsistency between the controlled drainage proposal and the existing Basin Plan. The alternative does not recommend or require the construction of new tile systems. At the same time, the alternative's effectiveness is not limited to the existing acreage in tile drains and can be extended to new areas if tiles drains are installed.

Comment: [page 34] The controlled drainage alternative will result in new costs to the farmer in addition to all the costs already incurred for improved drainage management techniques. There are a finite number of additional costs that the drained acres can bear and remain productive, but there does not appear to be any analysis of the cost impacts. Also, at that rate, the cost exceeds the cost of providing dilution water, and may well approximate treatment costs. Why then would this be the only alternative included for a programmatic EIR on salinity control measures? (SLDMWA)

Reply: The rationale for the selection of the salinity control alternatives analyzed in the DEIR is provided in section B of Chapter VIII. CEQA does not require an economic analysis of alternatives. Treatment costs are substantially higher than the costs cited in the DEIR for controlled drainage.

There are a finite number of costs that the drained acres can bear, and one of the purposes of this analysis is to document the costs of the alternatives analyzed.

Comment: [page 35] The DEIR recognizes some limitations of subsurface storage, but not its limited value on sloping lands and the fact that the entire root zone fills quickly upon irrigation of the drained fields regardless of "seepage from up-slope areas." (WWD)

Reply: The DEIR recognizes that a drawback of subsurface storage is that the water table can rise into the root zone. This drawback is more severe in sloping lands and the text has been revised to note this fact. However, most tile drained lands are in the trough of the valley with relatively small slopes.

The rate at which the root zone fills with water upon irrigation of the drained fields is dependent on management practices. In the Westlands Water District, 8,000 acres of tile drains and the collector system were plugged in approximately 1985. This system provided some drainage for up to 42,000 acres within the collector service area. This drained land is still in production even though the land has not discharged any tile drainage for approximately 14 years.

Section C.5. Crop Production

Comment: [page 35] The DFG recommends that a preferred salinity control alternative include a specific monitoring and management program acceptable to the DFG. (DFG)

Reply: Comment noted.

Comment: [page 35] While experiments in the uptake of some groundwater by crops are worthwhile, the district-wide experience in Broadview is that land subjected to saline irrigation becomes unproductive for tomatoes in 2-5 years, and that leaching for a similar period is required to restore productivity. The negative impacts of the proposed alternative include: salts buildup in the root zone; the leaching process is slow and salts cannot be moved quickly to take advantage of San Joaquin River assimilative capacity; stored salts may impact crop production if there is no assimilative capacity in dry years; lateral seepage from upslope areas may interfere with subsurface storage.

The alternative allows discharge for six months, not seven. (SLDMWA)

Reply: The need to maintain a soil salt balance is recognized in the DEIR, as are the possible negative impacts of the alternative. The maintenance of a controlled drainage system due to increased monitoring and management will impose costs on the owner of the system. The proposal does not call for complete curtailment of discharges in dry years when there is no assimilative capacity in the river.

The text has been amended to note that, as modeled, the alternative allows discharges for at least six months each year. In some years, year-round discharge would be allowed.

Comment: [page 35] Under the proposed drainage system reoperation, the upslope hydraulic influences will cause water logging and salt accumulation to occur in drained areas closer to the valley axis which will prevent future viable agricultural operations. (SJRECWA-1A)

Reply: The effects of the proposed drainage system reoperation on crop production are discussed in section C.5 of Chapter VIII. The DEIR states that some drainage may have to be allowed during drainage curtailment periods in order to mitigate the effect of a rising water table. The DEIR also states that the salt accumulation problem should be controllable through management and monitoring because drainage discharge is still allowed during the majority of the year. The DEIR notes that these issues will have to be evaluated by the Central Valley RWQCB if the SWRCB directs further evaluation of the drainage reoperation alternative.

CHAPTER IX. ENVIRONMENTAL EFFECTS OF IMPLEMENTING SOUTH DELTA SALINITY ALTERNATIVES (OTHER THAN VERNALIS)

Section A. BACKGROUND

Comment: [page 02] Figure IX-5 incorrectly positions the permanent Grantline barrier near Tracy Blvd. The barrier will be near the western end of Grantline Canal. (DWR, SDWA)

Reply: The fate of the Permanent Grant Line Canal barrier is still being resolved as part of CalFed's process. Furthermore, the operations described in the EIR are not intended to reflect the barrier operations as currently proposed by CalFed. In the SWRCB's modeling of the alternatives, the location of the Permanent Grant Line canal barrier is on the east end of Grant Line canal, as indicated in the figures, and barriers are operated to optimize water quality. This document is a programmatic EIR for the barriers. If the permanent barriers are implemented, project-level environmental review will be required.

Section A.2. Historical Salinity Conditions in the Southern Delta

Comment: [page 07] The figures given for interior Delta water quality show that there continues to be a serious problem. The Board should not assume that the Interim South Delta Program will resolve all of these issues given the parties' inability to secure permits that allow the reasonable use of those facilities. (SDWA)

Reply: The comment is correct that Figures IX-2, IX-3, and IX-4 show exceedance of salinity objectives. However, the purpose of the ISDP is to (1) improve water levels and circulation in the southern Delta, and (2) improve southern Delta hydraulic conditions to increase diversions into Clifton Court Forebay. Although implementation of the ISDP may improve circulation and water quality in certain areas at certain times of the year, water quality improvement is not a stated purpose of the ISDP. The purpose of the SWRCB's analysis was to determine the impact the barriers would have on water quality if they are operated as assumed.

Section A.3. Existing Conditions in the Southern Delta

Comment: [page 07] Existing Salinity Management Programs, Last Paragraph: The substance of the referenced ". . . recent draft contract. . . " should be disclosed. (DFG)

Reply: The contract is between USBR and SDWA and does not involve the SWRCB. The DFG should contact either for a copy of the contract.

Section A.3.b. ISDP

Comment: [page 08] The stated purposes of ISDP are incorrect. The DEIR should replace these with the project purposes which DWR and USBR have agreed upon. They are: "1) improve water levels and circulation in the south Delta channels for local agricultural diversions, and 2) improve

South Delta hydraulic conditions to increase the diversion into Clifton Court Forebay to maximize the frequency of full pumping capability at the Harvey O. Banks Pumping Plant". (DWR)

Reply: Revision made to text.

Comment: [page 09] The description of the ISDP preferred alternative is incomplete. It should also include obtaining a permit from the Corps of Engineers to increase diversions into Clifton Court Forebay up to 10,300 cubic feet per second per day on a monthly averaged basis. (DWR)

Reply: Change made to text.

Section B. ALTERNATIVES FOR IMPLEMENTING SOUTHERN DELTA SALINITY OBJECTIVES IN THE 1995 BAY/DELTA PLAN

Comment: [page 10] Contra Costa Water District, along with other signatories of the December 15, 1994 Bay/Delta Accord, believes that spring installation (April 15 to May 15) of the head of Old River barrier coupled with an export pumping reduction is an effective measure to protect salmon migration. However, the District does not believe that the proposed agricultural barriers are the best or only means to accomplish the South Delta salinity objectives. Other measures, such as source control, coordinated intermittent operations of the flow gates to minimize changes in the circulation pattern in the Delta, operation of only one one-way agricultural flow barrier (on the Middle River near Trapper Slough), installation of weirs instead of flow barriers, all have the potential to eliminate any adverse water quality impacts in central and south Delta, and should be considered. Some of these methods actually reduce salt loads whereas barriers merely redirect the impacts to others. Redirection of impacts is in serious conflict with the CALFED program and should not be promoted by the SWRCB. (CCWD)

Reply: Comment noted. The discussion of the southern Delta agricultural barriers in the DEIR is programmatic in nature. How barriers may eventually be configured is an issue for CALFED to consider.

Comment: [page 10] The DEIR analyzes three alternatives to achieve southern Delta salinity objectives: D-1485 streamflows with temporary barriers in place, 1995 WQCP flows with temporary barriers, and 1995 WQCP flows with permanent barriers as proposed by the ISDP. The SWRCB should significantly expand the analysis of southern delta salinity alternatives and consider additional alternatives, including: 1995 WQCP flows with no barriers; proposed revisions to the barrier configuration proposed by the ISDP; additional barrier configurations and operating rules; and other non-barrier alternatives. (CCWD, CCWD-2, DFG, Stockton, USDOI)

Reply: CEQA requires a lead agency to disclose the environmental effects of a reasonable range of alternatives that can achieve the project goals as measured against existing conditions. "Existing conditions" include the temporary barriers. Implementation of the ISDP program alternatives are still being negotiated within CALFED and cannot be fully evaluated until final operational and physical configurations are established. The DWR and the USBR will complete a FEIR/EIS on the project prior to its implementation. Therefore, the analysis for construction of barriers in this EIR is necessarily programmatic, which means that the discussion of alternatives in this EIR need not be exhaustive. The purpose of Chapter IX is to determine whether, under optimum conditions, the southern Delta salinity objectives can be met through construction and operation of the ISDP. The

SWRCB's action in the matter is limited to deciding whether the DWR and USBR should be required to meet the southern Delta objectives. Given the duration of the negotiations on this matter, it is probable that the DWR and the USBR would meet their obligations through barrier operation. The EIR contains sufficient information to consider a reasonable range of possible environmental effects, including "worst case" effects, at the program level. If the DWR and the USBR are required to meet southern Delta objectives, and they choose to do so through barrier construction and operation, they will have to prepare project specific environmental documentation for the barriers. The ISDP's goals of improving water levels and increasing exports are different than the SWRCB's project objectives, and it is neither appropriate nor required that the SWRCB analyze alternatives that are designed to best meet their goals. The commentors' recommendations are relevant to their process.

Section C. ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES

Comment: All the alternatives include either temporary barriers or permanent flow control structures. Several potential impacts associated with these barriers or flow control structures have been identified, including hydrodynamic changes in the central and south Delta due to operation of the flow control structures, changes in the velocity and direction of flows upstream and downstream of the structures, and increased sedimentation upstream of the structures.

Alternative 3 provides for construction and operation of the barriers proposed in the Interim South Delta Program (ISDP). The permanent tidal and fish barriers proposed under the ISDP are assumed in the DEIR to provide benefits to San Joaquin fall-run chinook salmon yet the DEIR provides no information to support this major assumption. We recommend that this language be modified in the final EIR unless significant information is included to support this major assumption. Several issues related to the ISDP need to be resolved before the ISDP is incorporated into a preferred alternative for implementing the 1995 Bay/Delta Plan. The range of operations approved for the ISDP should be included in the final EIR analyses. (DFG)

Reply: See comment for Chapter IX, Sections C.1.b and C.3. The effects of the flow alternatives on survival of fall-run chinook salmon smolts from the San Joaquin River basin were modeled with and without the Head of Old River barrier in place (results in Chapter VI). Model results show that survival of San Joaquin chinook smolts is higher with the barrier. The model is based on studies of release and subsequent recapture of coded wire tagged fall-run chinook smolts.

At the present time, there are many issues that need to be resolved before implementation of the ISDP program. Consultation between the DWR, DFG, and other agencies is on-going to determine project impacts, range of operation, and appropriate mitigation measures. The DWR and USBR will be completing necessary environmental documentation that evaluates the specific effects of barrier operation on aquatic resources in the south Delta prior to implementation of the ISDP program.

Comment: [page 12] "Fifteen areas of concern...." should be replaced with "Fifteen areas of potential impact...". Not all of these areas were determined to have significant environmental impacts or be of concern. (DWR)

Reply: Change made to text.

Comment: The economic costs of these impacts to the District due to implementation of the southern Delta salinity alternatives must be quantified, particularly the impacts of reduced reservoir

filling, increased reservoir chlorides, the cost of additional pumping to replace additional blending water releases needed to offset higher Delta salinities, and increases in the salinity of water delivered to CCWD customers. (CCWD, CCWD-2)

Reply: Implementation of the southern delta salinity objectives is not expected to result in greater costs to the CCWD. Figures IX-17 and IX-18 in Chapter IX, Section C.2.b, show the Percent Probability of Exceedence of Water Quality Objectives at Contra Costa Canal at Pumping Plant # 1 and Pumping Plant # 2. The graph compares the relative effects of southern Delta salinity barrier alternatives on salinity at Contra Costa's intakes, and supports the "No significant water quality impact" finding in section C.2.c. Furthermore, CEQA does not require economic analysis or mitigation of economic impacts.

Section C.1. Impacts Caused By Construction

Comment: [page 12] 3rd Paragraph. Change the dates...."An initial Study ... prepared by DWR Division of Planning in 1995 (DWR 1995)." Delete the last sentence, "Based on the initial study..." and add the following sentence taken from the 1995 Initial Study page 36: "As part of the ongoing environmental analysis for TBP, a USACE jurisdictional wetland delineation survey was prepared for DWR by a consultant. DWR prepared a biological assessment required as part of the endangered species process, which discussed potential impacts of the project on listed species and species proposed for listing. At the same time, DFG staff prepared an assessment of non-endangered species including assessments of impacts of fish, wildlife, and plant community resources. The studies did not specifically identify any other significant adverse impacts due to the proposed TBP installations. They did identify some possible adverse impacts, however, and concluded that it could not be determined that there were no significant impacts based on available data." (DWR)

Reply: Change made to text.

Section C.1.a. Water Quality

Comment: [page 12] Page 12 of Chapter IX describes the previous evaluations in the DWR's ISDP DEIR. However, there was no evaluation of DO included in the DWR's ISDP DEIR. The analysis in Chapter X of the SWRCB DEIR is the first evaluation of alternatives to satisfy the 6 mg/l DO objective. (Stockton)

Reply: Page 12 of Chapter IX does not indicate that the DWR's ISDP DEIR evaluated the effects of barrier operation on dissolved oxygen levels.

Section C.1.b. Aquatic Resources

Comment: [page 14] Operations of the barriers may have negative effects on internal Delta hydrodynamics and aquatic resources. The extent to which these effects may limit benefits for salmon needs to be clearly disclosed. The mitigation measures discussed here and in the ISDP DEIR are not adequate to reduce potential impacts to less than significant levels. (DFG, EDF, SJRG, SWC, Stockton)

Reply: The DEIR includes a programmatic-level description of the effects of the barriers. DWR is currently in consultation with the DFG and other agencies to identify the specific impacts of implementation of the ISDP program and the mitigation measures needed to ensure that adverse impacts are reduced to less than significant levels. Consequently, final analysis of impacts and mitigation measures is not available for the FEIR. The DWR and USBR will be completing necessary environmental documentation that evaluates the specific effects of barrier operation on aquatic resources in the south Delta prior to implementation of the ISDP program.

The effects on salmonids during the summer months are expected to be minimal because they generally occur in low numbers at this time of year.

Comment: [page 14] The text incorrectly states construction impacts on aquatic resources would be short term. The most significant impacts are long term and include removal of shallow water habitat, riparian, and emergent wetland. (DFG)

Reply: The text states that construction of the barriers would have short-term effects on aquatic resources. The short-term effects are then described. The text later states that the presence of the barriers would permanently alter near-shore shallow water habitat. The long-term effects are then described. Mitigation is proposed for this long-term impact.

Section C.1.c. Terrestrial Biological Resources

Comment: [page 19] 3rd paragraph, Mitigation. Add the following sentences to the paragraph:

ACTIVE RAPTOR NESTS Avoidance measures have been recommended to protect active raptor sites. Measures include rerouting truck traffic, pre-construction surveys by a DFG approved biologist, and levee inspections prior to dredging. During construction, on site biological monitoring shall continue.

SAN JOAQUIN KIT FOX Avoidance protocols to protect the kit fox include: pre-construction surveys, avoidance of kit fox dens, speed limits, avoidance of night construction, avoidance of entrapment, and sensitivity training of workers.

SWAINSON'S HAWK For the Old River and Middle River sites, if sites are found to be active, reroute traffic no closer than 1/2-mile from the project area. Trucks will remain rerouted until the biological monitor has determined the young Swainson's hawks have fledged. At the Grant Line site, special measures are recommended since a site is within 1,000 feet of the construction site. Mitigation for the loss of 5.8 acres of foraging habitat shall comply with the DFG management conditions as specified in the Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (Buteo swainsonii) in the Central Valley of California.

GIANT GARTER SNAKE Avoid direct impacts to any giant garter snakes and loss of potential garter snake habitat by avoiding placing dredge material in the agricultural drains of Victoria Island.

WESTERN POND TURTLE To avoid the loss of western pond turtles and eggs due to construction related activities, prior to construction, DWR and USBR should exclude turtles from suitable nesting sites by installing plastic fencing at all of the construction sites.

MASON'S LILAEOPSIS Avoidance of Mason's lilaeopsis, to the greatest extent possible, in final location of the barrier on Old River at Tracy will be incorporated into the final design of the facility. Currently, there is no established mechanism for broad scale mitigation of impacts to Mason's lilaeopsis (Shaffer, pers. comm.). Such a program is desirable given the continual influx of projects affecting the plant, including water projects and levee maintenance. In consultation with DFG Endangered Plant Program botanists, DWR/USBR should enter into an agreement to assist in the development of a recovery plan for the species. Participation will include funding of staff time to develop the plan or funding of specific research needs as identified by DFG. The limit of DWR/USBR responsibility in the program will be determined by relative costs of other commonly proposed mitigation such as transplanting and monitoring replacement populations. Preconstruction surveys will also be required. Prior to grading or construction, DWR and USBR shall consult with DFG and request consultation regarding impacts to Mason's and a permit or memorandum of understanding for the transplantation of Mason's, pursuant to DFG Code 2081. A plan for transplanting masons will be developed with DFG. Preconstruction surveys will also be required.

PERMANENT HABITAT LOSS The construction of the northern intake and the fish and flow control structures will result in the loss of habitat. To compensate for the loss, DWR and USBR will create habitat at another south Delta location using mitigation ratios listed below. (DWR)

Habitat	Permanent Loss Acres	Mitigation Ratio	Mitigation Acres
Riparian (Willow) Scrub	1.36	3:1	4.08
Freshwater Marsh	0.61	3:1	1.83
Blackberry Scrub	0.61	1:1	0.61
Wildrye Grassland	8.86	1:1	8.86
Cropland	5.8	1:1	5.8

Reply: Mitigation measures are contained in the DEIR/EIS for the ISDP and are subject to revision as a result of the DWR's and the USBR's CEQA/NEPA and Biological Opinion processes. The paragraph refers the reader to that document for a detailed listing of proposed mitigation measures for southern Delta salinity alternatives.

Section C.1.e. Navigation

Comment: [page 20] The SWRCB's description of the Head of Old River fish barrier accurately describes the facility as conceived in the DEIR/EIS for ISDP. However, the facility presently planned by DWR will be similar to the other agricultural flow control structures, with radial gates instead of liftgates and a boat lock in lieu of docking facilities, stairs and a jib crane. (DWR)

Reply: Change made to text.

Section C.2. Impacts to Water Levels and Salinity

Comment: [page 22] The footnote at the bottom of Tables IX-1 and IX-2 states: "If San Joaquin River flow exceeds 5,000 cfs, the temporary Head of Old River Barrier is removed." Current information used in planning the VAMP program suggests that the temporary Head of Old River Barrier cannot be installed when San Joaquin River flows exceed 5,000 cfs, however once installed

the temporary barrier can functionally operate up to a San Joaquin River flow level of approximately 7,500 cfs. (SWC)

Reply: The footnote is correct for the way the south Delta salinity alternatives were modeled.

Comment: [page 22] Tables IX-1 and IX-2 show barrier operations proposed by the SWRCB. The schedule for temporary barrier operation has been updated by the current USCOE permit for the Temporary Barriers project. The permanent barrier operation under the ISDP has also been modified. The SWRCB may wish to consider modifying the operations described in the DEIR. (DWR, DFG)

Reply: The temporary barrier installation and operation schedule in Table IX-1 reflects the condition that existed when the modeling was undertaken. The Temporary Barriers Program is experimental and operations are expected to change over time. Therefore, amending the operations to reflect the present, probably transient, condition would not be productive. With respect to permanent barrier operations, the operations described in the DEIR are not intended to reflect the barrier operations proposed by the ISDP. In the SWRCB's alternatives, barriers were operated to optimize water quality. They were not operated to achieve the other goals of the ISDP. Re-running DWRDSM for the three southern salinity control alternatives using these revised barrier operation assumptions would not provide significant new information regarding impacts to the environment.

Section C.2.a. Minimum Water Levels

Comment: [page 23] Operation of South Delta barriers could have a beneficial effect on dissolved oxygen by increasing flow in the San Joaquin River at Stockton. The EIR should compare San Joaquin River flows at Stockton between the south delta salinity alternatives. (Stockton)

Reply: Changes in flow down the San Joaquin River past Stockton from the operation of Southern Delta Salinity alternatives are small relative to the daily movement of water past Stockton caused by tide cycles. Furthermore, operation of the head of Old River does not change between the alternatives for any of the months. The information provided in the FEIR provides adequate ingormatioin to decision makers.

Comment: [page 30] Given the incorrect placement of the permanent Grantline barrier, the document concludes that the operation of the barrier results in reduced water levels downstream, by approximately one foot. This does not correspond to the modeling done by the ISDP. Basically, the water level downstream of all of the tidal barriers are purely a function of export rates. Given the elevation of the channels and the available water, those downstream areas rise and fall depending on export operations and are not significantly related to barrier operations. (SDWA)

Reply: The east-end placement of the Grantline barrier described in the EIR is correct for the way the southern Delta salinity alternatives were modeled. Model results would not be expected to be the same as the modeling done for the ISDP; assumptions used for the southern Delta salinity alternatives were optimized for water quality, whereas ISDP assumptions were optimized for water levels and circulation. Lower water levels are possible downstream of barriers due to the combined effect of exports and barrier operations.

Section C.2.b. Salinity

Comment: [page 30] We strongly recommend that the discussion of water quality impacts in Chapter IX be expanded from salinity to include each alternative's effect on total organic carbon and bromide levels of the water exported from the Bay/Delta to Southern California. The effects of such impacts should be considered in weighing the merits of each alternative. (LADWP)

Reply: The DEIR focused on constituents for which the SWRCB has set objectives. Currently, there are no objectives for bromide or TOC. In general, levels of bromide and TOC will either not change or will decline as river flows increase relative to D-1485 conditions. If LADWP believes that the SWRCB should consider objectives for bromide and/or TOC, it should raise the issue at the next triennial review.

Comment: [page 31] The salinity analysis in Chapter IX did not include CCWD's water intakes. The "no significant impact" finding on Page IX-41 is incorrect. Chapter IX of the EIR should quantify the change(s) in salinity at CCWD's intake pumps due to operation of South Delta Salinity Barriers and disclose the adverse impact(s) of Southern Delta salinity alternatives on water quality of CCWD's water supply. (CCWD, CCWD-2)

Reply: Figures IX-17 and IX-18 have been added to the discussion of impacts due to temporary and permanent barrier operation(s) alternatives in Chapter IX, Section C.2.b. The "Percent Probability of Exceedence of Water Quality Objectives at Contra Costa Canal Pumping Plant # 1" and "Percent Probability of Exceedence of Water Quality Objectives at Contra Costa Canal Pumping Plant # 2" graphs compare Base Case, 1995 Bay/Delta Plan, and Permanent Barrier Construction alternatives. The graphs show that 1995 Bay/Delta Plan and Permanent Barrier Construction alternatives result in either unchanged or slightly lower chloride concentrations at the CCWD Pumping Plants.

Comment: [page 31] Figure IX-17 appears to be incomplete for Alternatives 2 and 3. (DWR)

Reply: Figures IX-17 and IX-18 show electrical conductivity (Percent Probability of Exceeding Plan Objective) at Vernalis for April - August, and September - March, respectively. Modeled EC levels for Southern Delta Salinity Control Alternatives 2 and 3 are identical during both seasons because Vernalis is a boundary condition for DWRDSM, and both DWRDSM studies use the hydrology from the same DWRSIM model study.

Comment: [page 37] Chapter IX, Figures IX-25 through IX-31, show how often EC levels under one of the southern delta salinity alternatives will be greater than or less than the base case, on a percentage of years basis. The figures are somewhat confusing and the commentor requests that numerical values be given, rather than just the range of percent changes. (CCWD, CCWD-2)

Reply: Figure IX-25 [Frequency of Change in Salinity of Alternative 2 & 3 Compared with Alternative 1 - San Joaquin River at Airport Way Bridge (Vernalis)] corresponds to Figures IX-17 and IX-18 because they use the same DWRSIM data. The graphs simply illustrate the same data differently. Figures IX-17 and IX-18 provides ordered data for the irrigation and non-irrigation seasons and show the long-term frequency at which a given water quality level is exceeded. The exceedence graphs give the numerical range of water quality (expressed in electrical conductivity units) expected at the salinity stations.

Likewise Figures IX-26 and IX-27 [Frequency of Change in Salinity of Alternatives 2 and 3 Compared with Alternative 1 - Old River at Middle River (Union Island)] correspond to Figures IX-19 and IX-20 [Percent Probability of Exceedence of Plan Salinity Objectives at Union Island for April-August and September-March]; Figures IX-28 and IX-29 [Frequency of Change in Salinity of Alternatives 2 and 3 Compared with Alternative 1 - San Joaquin River at Brandt Bridge] correspond to Figures IX-21 and IX-22 [Percent Probability of Exceedence of Plan Salinity Objectives at Brandt Bridge on SJR for April - August and September - March]; and Figures IX-30 and IX-31 [Frequency of Change in Salinity of Alternatives 2 and 3 compared with Alternative 1 - Old River at Tracy Road Bridge] correspond to Figures IX-23 and IX-24 [Percent Probability of Exceedance of Plan Salinity Objectives at Old River at Tracy Road Bridge for April - August and September - March]

By themselves, Figures IX-17 through IX-24 provide limited information because the overall differences in salinity between southern delta salinity alternatives is not great. The EIR uses Figures IX-25 through IX-31 in conjunction with Figures IX-17 through IX-24 to compare relative changes in salinity broken out in different year types on a percentage of years basis to make differences among alternatives more obvious. Consequently Figures IX-25 through IX-31 show needed information and do not require revision.

Section C.2.c. Mitigation for Impacts

Comment: [page 41] Adaptive management of the head of Old River barrier should be extended to include water quality monitoring with barrier closure during periods when increased flows past Stockton would improve water quality conditions. Tidal operation (like the SMSCG) may provide additional opportunities to minimize impacts to fish, water levels, and salinity in the South Delta. (Stockton)

Reply: Comment noted.

Section C.3.b. Impacts to Aquatic Resources, Impacts

Comment: [page 41] The effect of the barriers on the transport of organisms may be small compared to the effect of tidal flows. (Stockton)

Reply: Comment noted.

Comment: [page 41] The potential effects of ISDP barriers on aquatic resources are described as having potentially significant effects on some species because of the increased likelihood of transport of eggs and larvae or straying of juveniles and adults from central Delta channels for the same level of South Delta export. However, these same South Delta flow changes will increase DO concentrations in the San Joaquin River, which should be beneficial for many of the same aquatic resources being evaluated. The possible beneficial effects of these flow changes on the food-web productivity within the San Joaquin River have not been evaluated. (Stockton)

Reply: The effects of barrier operations on DO concentrations are described in Chapter X.

Comment: [page 42] The FEIR should clearly explain that the fish barriers may not always be operated for the full duration of the fall and spring flow protection periods defined in the 1995

Bay/Delta Plan due to ESA and other requirements. An assessment of how intermittent operation may change the level of protection for San Joaquin fall-run chinook salmon assumed in the DEIR should be added to the FEIR to allow analysis and disclosure of the full range of impacts of this action in combination with the other actions. (DFG)

Reply: Revisions made to text.

Comment: [page 42] "The proposed barriers would affect neither Delta inflow nor Delta outflow, and would not affect outflow/abundance relationships discussed in Chapter VI." There does not appear to be a technically sound basis for the underlying assumption that the proposed barriers would not affect outflow/abundance relationships. For example, installation of the Head of Old River Barrier during the spring is expected to influence the relationship between San Joaquin River flow or Delta outflow and the survival and abundance relationship for San Joaquin origin fall-run chinook salmon. Installation of the barrier may also affect the survival and abundance of splittail produced in the lower San Joaquin River as observed in recent years. (SWC)

Reply: See general comment for Chapter IX, Sections C.1.b and C.3 for discussion of the south Delta barriers. The sentence "The proposed barriers would affect neither Delta inflow nor Delta outflow, and would not affect outflow/abundance relationships discussed in Chapter VI." has been deleted. Although Delta outflow and inflow would not be affected by installation of the barriers, the outflow/abundance relationships could change.

Comment: [page 42] Table IX-2. This table would be improved by including a column that shows the changes in assumed ISDP barrier operation between the DWR ISDP DEIR and the SWRCB DEIR. For example, the SWRCB DEIR alternatives assume that the head of Old River barrier would be operated in September-November, whereas the DWR DEIR operated the barrier only in October. (Stockton)

Reply: The ISDP is still under revision. The barrier operations may be further modified. Therefore, Table IX-2 will not be modified as recommended.

Comment: [page 42, 43] The DEIR states that closure of the barriers will result in water that had previously been diverted to the pumps at Old River to instead be diverted from the central Delta through channels such as Turner Cut and Columbia Cut. The barriers primarily causing this effect are the Head of Old River barrier and the Grantline Canal barrier. The Middle River and Old River near Tracy barriers by themselves do not produce this effect. The DEIR should clarify this. (DWR)

Reply: Revision has been made to the text.

Comment: [page 43] In general the upstream migration of species such as delta and longfin smelt occurs earlier than April. Care should be taken in these analyses to insure that the seasonal timing of the various life history stages of targeted species coincides appropriately with the period included in the analysis of alternatives. Similarly, the reference to the upstream spawning migration of adult late fall-run salmon (page IX-43) should be critically reviewed with regard to the April time frame included in these analyses. The report also makes reference to migration for species such as winter-run chinook salmon and spring-run chinook salmon, both of which occur on the Sacramento River and its tributaries. Since the Delta Cross Channel would be closed during April, a serious question

arises whether winter-run chinook salmon and spring-run chinook salmon would be adversely affected by changes in Delta hydraulics during April as a result of barrier operations. (SWC)
Reply: The Biological Opinion on the effects of long-term operation of the CVP and SWP on the threatened Delta smelt (March 6, 1995) reports that migrating delta smelt adults were present at the CVP Tracy Pumping Plant from late December 1990 to April 1991. The spawning season in the Delta was reported to vary from year to year and may occur from late winter (December) to early summer (July). The draft CESA Biological Opinion for the Interim South Delta Program (March 1998) states that adult Delta smelt may be present in the Delta in every month of the year. Therefore, upstream migrating, holding, or spawning adult Delta smelt may be present in the south Delta in April.

The timing of upstream migration of longfin smelt is reported to occur in November through May, with a peak period in January through April (DWR and USBR 1996). The timing of upstream migration of adult late fall-run chinook is reported to occur in October through April (DWR and USBR 1996; USFWS 1995; USFWS 1996). Winter and spring-run upstream migrating adults and downstream migrating juveniles may be present in the Delta in April (Draft CESA Biological Opinion for the Interim South Delta Program, March 1998). Even if the Delta cross channel is closed, these fish may be present and affected by the operation of barriers in the south Delta.

References:
DWR and USBR. 1996. Draft EIR/EIS Interim South Delta Program (ISDP), Volume 1. July 1996. Sacramento, CA.

USFWS 1995. Working paper on restoration needs: habitat restoration actions to double natural production of anadromous fish in the Central Valley of California, Volume 3. May 9, 1995. Stockton, CA.

USFWS 1996. Recovery plan for the Sacramento-San Joaquin Delta native fishes. November 1996.

Comment: [page 43] The impact of barrier operations on fishery resources depends on the fish species present. The text should be modified, as appropriate, to explicitly identify the species and lifestages to be included in the analysis at various time periods during the year. Chinook salmon and steelhead are not present in the lower San Joaquin River and southern Delta during the summer as the DEIR implies. Adult salmon and steelhead migration does not peak in October as the DEIR states. (SWC)

Reply: Juvenile or adult chinook salmon and steelhead may be present in the south Delta and potentially may be affected by barrier operation in the summer months (June, July, and August). Reports of juvenile chinook salmon and steelhead occurrence in this time period include:

- Fall-run juveniles are reported to rear and emigrate through the Delta from January through June (DWR and USBR 1996).
- Winter-run juveniles are reported to rear and emigrate through the Delta from September through June (DWR and USBR 1996).
- Spring-run juveniles are reported to emigrate through the Delta from October through June (DWR and USBR 1996).
- Upstream migrating adult fall-run may be present in July and August (DWR and USBR 1996).
- Upstream migrating winter-run and spring-run may be present in June (Biological Opinion for Interim South Delta Program, March 1998).

- Adult steelhead may be present in August (DWR and USBR 1996).

Barrier operation in October has the potential to affect upstream migrating fall-run and late fall-run chinook and steelhead. Peak periods for upstream migration of Sacramento River and San Joaquin River fall-run chinook are reported as August through October, and August through November, respectively (Biological Opinion for Interim South Delta Program, March 1998). Late fall-run chinook also begin upstream migration in October. The peak upstream migration period for steelhead is reported as September through January (DWR and USBR 1996).

Section C.3.c. Mitigation for Impacts

Comment: [page 44] The mitigation that is described on page IX-44 implies that Old River barrier closure is bad for some fish, at least at some times of year. This has not been clearly demonstrated. The benefits for chinook and splittail juveniles in the spring and for DO conditions in the summer and fall are highly significant. The mitigation approach to operating the barrier in response to information from intensive fish monitoring is supported by Stockton. However, this monitoring control approach will require that the head of Old River gate is easily operated (opened and closed), rather than the fixed drop-gate design proposed in the ISDP. Stockton suggests that an operable barrier is necessary to minimize the environmental impacts that may occur from blocking migration or increasing the transport (entrainment) of central Delta fish. (Stockton)

Reply: DWR and USBR's plans for the permanent barriers have been revised to use radial gates instead of vertical gates. Barriers will also include screened culverts with control valves to manage water levels and water quality when the gates are closed.

Section C.4.b. Impacts to Terrestrial Biological Resources, Mitigation for Impacts

Comment: [page 45] Deleting the Grant Line Canal Barrier should also be considered as a mitigation measure for impacts to terrestrial biological resources. (DFG)

Reply: Comment noted. Not installing the Grant Line Barrier is not mitigation for installing other South Delta barriers.

Section C.5.b. Impacts to Recreation, Impacts

Comment: [page 47] The description of the Head of Old River barrier should be updated as noted in our comment for page IX-20, above. (DWR)

Reply: Change made to text.

Section D. SUMMARY

Comment: [page 48] (Summary). The DEIR states that "Potential significant impacts to water levels and salinity.... as a result of barrier construction and operation (under Alternative 3) are identified." DWR does not understand the basis for this conclusion and believes it is erroneous. The barriers significantly improve minimum water levels upstream of each barrier with an accompanying

slight reduction in water levels downstream of the barriers. We believe the slight reduction in water levels immediately downstream of each barrier is not significant, particularly since the Delta channels downstream of the barrier are significantly deeper than those upstream of the barriers and the siphons and pumps are generally located deeper in the water column. This factor, in conjunction with the net improvement in minimum water levels upstream of the barriers constitutes an overall net benefit to water levels in the south Delta area, not a potential significant adverse impact. With regard to water quality, IX-41 correctly states that "No significant impacts to water quality from operation of the barriers were identified." The short-term water quality impacts from barrier construction are also not significant. (DWR)

Reply: DWR's comment is correct. The summary will be revised consistent with the text in the sections regarding water levels and salinity.

Comment: [page 49] DWR believes that the SWRCB should select Southern Delta Salinity Alternative 3 as the preferred alternative. First, we do not agree with the DEIR that the barriers may cause significant impacts to water levels. Second, the objectives being considered by the SWRCB in this chapter are to protect the beneficial uses of south Delta agriculture. The South Delta Water Agency represents these same interests and has negotiated a draft settlement agreement with DWR and USBR calling for the construction and operation of permanent barriers. The SDWA also sees the barriers as one of the key solutions to providing irrigation water of acceptable quantity and quality. We have achieved a negotiated settlement with regard to South Delta water quality objectives, and believe the SWRCB should select this as the preferred alternative. (DWR)

Reply: Comment noted. In response to the second sentence and other DWR comments, revisions have been made to text discussing the southern Delta salinity alternatives impacts on water levels.

CHAPTER X. ALTERNATIVES FOR IMPLEMENTING DISSOLVED OXYGEN OBJECTIVES IN THE SAN JOAQUIN RIVER

Comment: The DEIR briefly discusses dissolved oxygen dynamics, based largely upon the City of Stockton's dissolved oxygen model. While this may be appropriate to evaluate the effect of program alternatives on oxygen dynamics in the grossly affected reach of the San Joaquin River, a more comprehensive water quality model needs to be developed which integrates dissolved gas dynamics in three dimensions with the proposed structured modifications in flow, which ultimately affect salinity, temperature and other considerations currently being assessed. (DFG)

Reply: Comment noted. The development of a comprehensive water quality model is beyond the scope of this EIR.

Comment: Some of the material reported in Chapter X is not accurate, or, at least can be misleading. There is also information valuable to the DEIR and Chapter X which has not been discussed. For example, Stockton has prepared numerous sensitivity analyses that help explain the complex DO issue and could contribute to the development of effective alternatives and programs to control DO.Stockton intends to offer such alternatives for the SWRCB's consideration. (Stockton)

Reply: The SWRCB has considered the parties' comments regarding inaccurate and/or misleading information in the DEIR and has revised the information as appropriate. The FEIR contains the sensitivity analysis prepared by the City of Stockton.

Comment: Changes due to the proposed actions will result in changes in DO levels. This potential impact should be disclosed and considered. In addition, the proposed San Joaquin River Agreement itself does not even address DO, effects on DO, or the means by which the participation of its signatories would contribute to meeting DO objectives. (Stockton-2)

Reply: The proposed action will assign responsibility to meet the flow objectives. Since the objectives are essentially the same for the alternatives (Alternatives 7 and 8 require lower Vernalis flows), the flows on the San Joaquin River are similar for most of the alternatives during most months (see Tables VI-3 and VI-4), the exceptions are Alternative 7 and 8. The FEIR includes the results of modeling the sensitivity of DO to changes in flow. The 1995 Bay/Delta Plan includes both flow and DO objectives on the San Joaquin River. The 1995 Bay/Delta Plan's program of implementation does not include flows in excess of the flow objectives to meet the DO objective. Because the principal parameter over which the upstream water right holders whose rights could be affected by the SWRCB's decision have control is flow, the upstream water right holders are not assigned responsibility to meet the DO objectives.

Comment: The SWRCB should take a much harder look at the DO objectives. Given the difficulty of attainment, the objectives themselves should be reviewed. Given the multitude of factors affecting DO, solutions must be broader than the regulation of only one of them. With its broad expertise and jurisdiction, the SWRCB is well-suited to help develop and bring about cost-effective improvements to DO in the San Joaquin River. Our comments, and the testimony we will provide, are intended to encourage that effort. (Stockton)

Reply: The SWRCB does not propose to revisit objectives in this proceeding. Review of the dissolved oxygen objectives is a subject that could be addressed at the next periodic review of the 1995 Bay/Delta Plan.

Comment: Many factors affect DO concentrations. Historically, there has been little attention given to anything other than Stockton's discharge. This is inappropriate and unfair. Also, benefits that could be achieved from further regulation of Stockton would not be cost-effective. Stockton has attempted to provide the SWRCB with information that would allow the development of sophisticated, effective, and cost-effective alternatives. It is clear that, to achieve DO objectives, a combination of measures must be implemented. We were pleased that the DEIR considered the closure of the Old River barrier in September as part of the evaluation. However, there is an opportunity to develop other, refined alternatives. Stockton will provide the SWRCB with evidence regarding such alternatives at the hearings. (Stockton)

Reply: Comment noted. The selected alternative will take into consideration the evidence presented at the Bay/Delta Hearing.

Comment: We are concerned that the base case significantly underestimates the potential impacts to the San Joaquin River because the base case does not represent the current effluent limitations for the treatment plant. (CVRWQCB)

Reply: The model simulation by the City of Stockton used the monthly average effluent loading from the treatment plant during October 1995 through September 1996 period which averaged 31 MGD. Monthly average flows for July, August, and September from 1986 to present do not exceed 40.1 MGD. The three month, ten year overall average is 33.9 MGD. The 12 month annual average effluent discharge from the Stockton RWCF for the period of 1987 to 1995 was 36 MGD. While true that the relative improvement in DO concentrations from improved treatment or from the no discharge option would increase if the model were run with higher Stockton RWCF flows, the 31 MGD flow used in this analysis was adequate for showing general trends in the response of dissolved oxygen levels to various alternatives.

Section A.1. BACKGROUND, Factors That Affect DO Levels in the San Joaquin River

Comment: [page 01] Temperatures in the vicinity of Stockton are usually higher than 70 F during most of September. Salmon migration may not occur at this temperature, therefore the 6 mg/l DO objective may be overly protective. (Stockton)

Reply: DO concentrations are strongly dependent on water temperature. Therefore, it may not be possible to determine the fundamental cause of delayed upstream salmon migration during high water temperature conditions. This subject should be addressed at the next triennial review.

Comment: [page 01] The DEIR suggests that water quality in the vicinity of Stockton deteriorates in the fall. The conditions of low flow, high temperatures and high BOD loading from algae and other particulate organics that produce a large sediment oxygen demand (SOD) generally occur during the late spring, summer and fall (see Figure X-3). (Stockton)

Reply: The last paragraph on page X-1 will be revised to read "Water quality conditions in the San Joaquin River typically begin to deteriorate in the late spring, summer, and fall when flow in the river is low, water diversion rates are high, water temperature is high, and wastewater discharges into the river from upstream sources combine to increase the biochemical oxygen demand (BOD)."

Comment: [page 01] References should be provided for the descriptions of the range of DO levels described in the second to the last sentence in paragraph 4. (DWR)

Reply: The 3rd to the last sentence in the 4th paragraph on page X-1 is referenced as "Hallock 1970." The subsequent two sentences are cited from the DFG's Statement made at the November 15, 1995 SWRCB Workshop "DFG 1995," as indicated by the reference provided.

Section A.1.a. San Joaquin River Flow

Comment: [page 03] The use of the term "assimilation capacity" in the second paragraph is unclear. (DWR)

Reply: Pg X-3 2nd paragraph will be rephrased as follows:
" A slack water condition significantly affects DO concentrations by reducing the assimilative capacity of the river (the ability of a waterway to dilute substances to a level where there are no deleterious effects on humans or the aquatic environment) and by promoting algae growth which results in increased oxygen demand as the algae die and decompose."

Comment: [page 03] The DEIR describes the San Joaquin River flow near Stockton as influenced by tidal flows and the flow split at the head of Old River. Tidal flows (two tidal cycles each day) provide good mixing conditions in the vicinity of Stockton (average tidal flow of about 2,000 cfs). The net downstream flows are largely controlled by the tidal hydrodynamics at the head of Old River. (Stockton)

Reply: The City of Stockton submitted conflicting evidence in the Bay/Delta Hearing regarding this issue. Therefore, the text was not revised for the FEIR.

Comment: [page 03] The description provided in the third paragraph for the San Joaquin River near Stockton is not unique to the San Joaquin River but holds true for all Delta waterways. It is probably a combination of these factors plus the discharges, deep channels, resultant poor assimilative capacity. It is the fact that this part of the channel is a migratory corridor for fall-run chinook that makes the DO concentrations in this area significant. (DWR)

Reply: The 1st paragraph on page X-1 states "The 1995 Bay/Delta Plan contains a dissolved oxygen (DO) objective of 6.0 mg/l from September through November in the lower San Joaquin River to protect fall-run chinook salmon." The 4th paragraph on page X-1 further explains that the lower San Joaquin River is a migratory corridor for fall-run chinook salmon. It would be repetitive to add a similar description only four paragraphs later.

Section A.1.b. San Joaquin River Geometry

Comment: [page 03] Consider using metric units throughout. In the text, dissolved oxygen is properly expressed in mg/L, but water depth (X-3) is measured in feet rather than meters, and water temperature is measured in Fahrenheit rather than centigrade. (DWR)

Reply: The SWRCB used standard conventions for each of the parameters described.

Section A.1.d. Oxygen Demand

Comment: [page 04] The discussion of the effect of Stockton's discharge should be clarified. In particular, explanation should be provided of how the 16.8 and 24.8 percent numbers were calculated. Stockton believes that these represent worst case model runs, not reality. (Stockton)

Reply: The 16.8 and 25.8 percent figures in the EIR were taken from the report by Carl W. Chen, Denial Leva, and Robert Schanz entitled "A Report on Dissolved Oxygen in San Joaquin River Near Stockton Outfall," September 1993. The same data was also provided to the SWRCB in the 1995 Bay/Delta Hearings as City of Stockton Exhibit 5. The report did not provide an explanation for how the numbers were calculated, nor did it indicate that the provided numbers represent worst-case conditions.

Comment: [page 05] In the discussion on the San Joaquin River Basin (III-73), there should be some reference to waste discharges to the San Joaquin River. (DWR)

Reply: A sentence which reads "there are other NPDES dischargers on the San Joaquin River that may also have impacts on dissolved oxygen" will be added to the 1st paragraph on page X-5 following the last sentence.

Comment: [page 05] Table X-1 lists the maximum discharge rates for various NPDES discharges. Although Stockton's permit has a Daily Peak Wet Weather Flow of 67 mgd, this would only occur in December through March, and would never occur in the late summer or early fall, which are the months of most concern for DO. Monthly average flows for July, August, and September from 1986 to present do not exceed 40.1 mgd. The three month, ten year overall average is 33.9 mgd. Attached is a chart showing the discharge for these three-month time periods over the last 12 years. The plant currently has a capacity of 38 mgd during the canning season. Stockton's RWCF master plan update is projecting an upgrade to 48 mgd. (Stockton)

Reply: Comment noted. The table correctly identifies that the discharge rates are maximums.

Section A.2. Regulatory History

Comment: [page 07] It must be kept in mind that the objectives for dissolved oxygen in waters of the Delta were not derived based on fully meeting biological needs but rather were negotiated to afford a "reasonable" degree of protection for the majority of resident fish species. The DEIR should acknowledge that further scientific investigation, especially that relating to the relationship between flow, temperature, nutrient and BOD loading in the entire Delta is warranted and essential. (DFG)

Reply: The issue of the appropriateness of the existing DO objectives is not a subject for this proceeding, but this issue should be raised at the next review of the SWRCB's Delta objectives.

Section A.3. Historic DO Conditions

Comment: [page 08] A 1969 Memorandum of Understanding (1969 MOU) among DWR, DFG, USFWS and the USBR provides for up to 60,000 AF of releases by the CVP from New Melones or other reservoirs on the San Joaquin River system to help achieve the DO objectives. If Stockton's WWTP does not meet more stringent effluent limits for several years, an effective interim solution to the DO problem is necessary. The SWRCB should require that the CVP meet the terms of the 1969 MOU by providing additional flow releases in the fall in combination with the fall Barrier to assist upstream migrating salmon until such time as the phased improvements in the Stockton WWTP are completed and the dissolved oxygen objectives are met. (DFG)

Reply: Comment noted. As stated in the fourth paragraph on page X-28, there is a seasonal trend of low DO even at high flow conditions and other parameters have significant effects on DO as well. The amount of water required to improve DO significantly can be substantial. At Turner Cut, increasing flow can reduce DO at low flow conditions.

Comment: [page 09] The review of Mossdale and Stockton hourly DO data that is summarized in Figures X-2 and X-3 indicates that episodes of low DO can occur which are not correlated with Stockton RWCF discharge loads. The diurnal variation in hourly DO and pH data at Mossdale can be used to indicate when substantial algae concentrations are present. The hourly monitoring at Mossdale and Stockton should be continued as part of the adaptive management efforts of the CVRWQCB. However, Stockton suggests that the only way to identify the effects of the discharge relative to other natural factors such as flow and algal respiration and decay is with a water quality model. (Stockton)

Reply: Comment noted.

Section A.4.a. Current and Proposed Management Actions to Improve DO, USCOE Aeration Facility

Comment: [page 10] The USCOE aeration device is described on page X-10. Stockton understands that the device is operated continuously during the fall (September-November) once DO conditions approach 5 mg/l. Stockton suggests that additional aeration devices should be investigated as an alternative method of achieving DO objectives. Aeration in the turning basin might be used to compensate for the effects of algae and high SOD. The aeration performance of the device should be verified with a field study. (Stockton)

Reply: The aeration facility in the Stockton ship channel is used to mitigate for the reduction in DO concentrations which occurs when the ship channel is dredged. The addition of more aeration devices may be an alternative way to meet the DO objectives; however, this is beyond the scope of measures the SWRCB might implement. Additionally, the installation of more aeration devices could have associated impacts for which an EIR might be required. This is an alternative that the City of Stockton could consider if it were required to meet the DO objective.

Section A.4.b. Barrier at Head of Old River

Comment: [page 10] Without the Old River barrier there are times when all of the flow of the San Joaquin River flows down Old River. (CDWA)

Reply: Comment noted. The river does not dry up, rather flow in the San Joaquin River is negative and water is drawn from the Central Delta in such circumstances.

Section A.4.d. Water Quality Regulatory Actions by the Central Valley RWQCB

Comment: [page 11, 12] Pages X-11 and X-12 describe how NPDES limitations for Stockton were adopted by the CVRWQCB on October 24, 1994. Stockton did not protest the carbonaceous BOD limits, but had significant problems with the ammonia limits adopted. The numerous meetings in the 1990-91 time period were held to assist Stockton in establishing an ammonia standard that was both reasonable and that could be afforded by the citizens of Stockton. Stockton came out of those meetings with the understanding the ammonia limit would be 7 mg/l. The CVRWQCB staff submitted a draft Cease and Desist Order to Stockton in July 1994 that contained an ammonia discharge requirement of 0.5 mg/l. This became the issue before the CVRWQCB, as well as the time to construct facilities to remove ammonia. The CVRWQCB did not impose the Cease and Desist Order, but did approve a 2.0 mg/l ammonia objective. Stockton then appealed to the SWRCB. (Stockton)

Reply: Comment noted. The information contained in the EIR does not conflict with the information provided in this comment, with the exception that the text in the first paragraph on page X-12 has been revised to read "The City objected to the 2.0 mg/l monthly average ammonia (NH3) limit during the April through October period."

Comment: [page 12] The CVRWQCB and the SWRCB need either to adopt seasonal prohibitions of discharge or to require construction of the necessary facilities to remove reliably ammonia and BOD to acceptable levels. (DFG)

Reply: Alternative 4 looks at the effects of more restrictive CBOD and ammonia limits on the discharge from the Stockton WWTP. The CVRWQCB is also reviewing the issue of appropriate CBOD and ammonia effluent limitations for the City of Stockton. Effluent limitations for other dischargers are set as part of the NPDES and Waste Discharge Requirement Permitting process.

Section B. ALTERNATIVES FOR IMPLEMENTING THE DO OBJECTIVES

Comment: The alternatives rely heavily on controlling flow to improve dissolved oxygen conditions. Increasing flow alone will not provide the water quality improvements being sought. (DFG)

Reply: It is true that increasing flow will not necessarily provide the water quality improvements being sought. The modeling results depicted in Figures X-4 through X-18 show that changes in flow within the modeled range do not always accomplish the 6.0 mg/l objective. Page X-22 paragraphs 1, 3, 4, 5 and page X-23 paragraphs 1, 2, and the statement in paragraph 3 indicate that none of the alternatives will result in DO objectives being met in all water year types.

The combined effect of municipal, industrial, urban and agricultural waste discharges has a substantial effect on DO concentrations. The control of these waste discharges is principally the responsibility of the CVRWQCB. The SWRCB will consider directing the CVRWQCB to undertake actions directed towards the discharges based on evidence submitted at the hearing.

Comment: Of the four alternatives considered, none will provide the necessary assurance of compliance with the dissolved oxygen objective. (DFG)

Reply: Comment noted. The modeling results depicted in Figures X-4 through X-18 clearly show that the alternatives do not always accomplish the 6.0 mg/l objective. Page X-22 paragraphs 1, 3, 4, 5 and page X-23 paragraphs 1, 2, and the statement in paragraph 3 indicates that "none of the alternatives will result in DO objectives being met in all water year types."

Comment: [page 13] The importance of flow on water temperature should be mentioned here. In the Delta, water temperature decreases with inflow in both the Sacramento and San Joaquin Rivers. Using our continuous monitoring data, we have calculated a negative correlation between temperature and Sacramento and San Joaquin River flow. (DWR)

Reply: The discussion in this section deals with controllable parameters in the Delta. There is generally an inverse relationship between flow and temperature; however, temperature cannot be effectively or significantly controlled with flow. During the cross examination of the City of Stockton's expert witness Russell T. Brown, Dr. Brown verified this assessment (R.T., pp. 4363). In addition, the 1991 Water Quality Control Plan for Salinity (91-15WR) states the following: "Based on the record in these proceedings, controlling temperature in the Delta utilizing reservoir releases does not appear to be reasonable, due to the distance of the Delta downstream of reservoirs, and uncontrollable factors such as ambient air temperature, water temperatures in the reservoir releases, etc. For these reasons, the SWRCB considers reservoir releases to control water temperatures in the Delta a waste of water; therefore the SWRCB will require a test of reasonableness before consideration of reservoir releases for such a purpose." (pp. 5-16)

Comment: [page 13] The discussion of alternatives for implementing the DO objectives states that "Water temperature, sediment oxygen demand and algal blooms were not evaluated because there are no controllable mechanisms by which the SWRCB can significantly affect these parameters." The DFG does not concur with this statement. While there may not be an immediate response in any of these parameters to changes in regulated inputs, there may very well be significant seasonal or long-term changes in temperature, sediment oxygen demand and algal blooms as a result of implementation any of the selected alternatives or approaches, and thus each must be evaluated for overall achievement and effect. (DFG)

Reply: The alternatives may affect temperature, sediment oxygen demand and algal blooms. The EIR analyzes the effects of the flow alternatives on temperature, to the extent possible. This information is provided in Chapter VI. No tools are available to quantify the temperature effects of the alternatives for achieving dissolved oxygen objectives or the effects on sediment oxygen demands or algal blooms.

Comment: [page 13] The DFG acknowledges that a fully operational Head of Old River barrier is critical to completing a full evaluation of the potential positive and negative effects of a barrier at this

location. However, we have serious concerns regarding the barrier design depicted in the DEIR/EIS which includes vertical lifts gates to be raised or lowered by a traveling gantry crane permanently mounted on the barrier. We believe this design will constrain barrier operations and perhaps limit the ability to demonstrate fishery and water quality benefits and implement operations to reduce adverse hydrodynamic impacts elsewhere in the Delta. We recommend the Head of Old River barrier be designed with radial gates to allow for more efficient and flexible operations. It should also include provisions or facilities for upstream passage for species such as adult San Joaquin fall- run chinook salmon. (DFG)

Reply: The SWRCB does not generally specify how facilities constructed to meet objectives should be designed. Concerns regarding design of the proposed barriers should be raised in the environmental review and permitting process for the ISDP.

Comment: [page 13] A fifth alternative (combining Alternatives 3 & 4) should be evaluated as the preferred alternative in the FEIR. (DWR)

Reply: The SWRCB requested the City of Stockton to model an additional alternative that would represent a combination of Alternatives 3 and 4 (1995 Bay/Delta Plan flows, reduced BOD and ammonia levels from the Stockton RWCF as specified by the CVRWQCB, and permanent barrier structures in the south Delta). The modeling results appear in the FEIR as "Alternative 4."

Section C.1. ENVIRONMENTAL EFFECTS OF THE ALTERNATIVES, Impacts to Water Quality in the San Joaquin River

Comment: [page 14] With respect to Alternative 4, the DEIR does not present any analysis that would show this alternative to be feasible. "Zero discharge" was modeled as a sensitivity analysis, in the same manner as the sensitivity analyses for other factors. The extreme conditions of other sensitivity analyses have not been used in the DEIR. (Stockton)

Reply: The SWRCB requested the City of Stockton to remodel Alternative 4. The discharge quantity from the Stockton treatment plant has been set at the 1996 level of effluent discharge and the BOD and ammonia levels has been reduced to meet the requirements of the CVRWQCB Order WQ 96-09. Remodeling of Alternative 4 provides a more direct comparison among alternatives.

Comment: [page 14] Third Paragraph. Stockton is in the process of expanding and rehabilitating its RWCF, but the six-stage expansion project has been revised. Stockton is currently updating the RWCF master plan and the next expansion stage will upgrade the plant to 48 mgd with an ultimate buildout capacity of 55 mgd. The current effluent quality does not meet a 2.0 mg/l ammonia average limit. Stockton would have to add nitrification facilities to reduce the ammonia levels down to 2.0 mg/l. Nitrification facilities are very expensive and the costs may likely be much higher than the costs shown on the bottom of page X-14 and the top of page X-15. (Stockton)

Reply: The third sentence of the third paragraph in section C.1 (page X-14) will be revised to read "Stockton is in the process of expanding and rehabilitating its WWTP and the master plan is currently being updated to reflect the planned upgrade to 48 mgd capacity with an ultimate build out of 55 mgd." The last sentence on page X-14 will be revised to read "Stockton testified during the Bay/Delta Hearings that the cost of constructing nitrification facilities to achieve an effluent quality of 2.0 mg/l ammonia would be $61 million plus additional financial costs of $17 million."

Comment: [page 14] It may not be appropriate to use 1957-1961 hydrology because of subsequent changes to the Bay/Delta estuary. (DWR)

Reply: The DEIR uses simulated hydrology, not actual hydrology. DWRSIM modeled lower San Joaquin River flow at the 1995 level of development and the modeling output was used as an input for the Stockton DO model. The years 1957, 1966, 1981, 1982, and 1991 were used to represent above normal, below normal, dry, wet, and critically dry water years, respectively. These same years were selected by the DWR after consultation with the DFG for the purposes of modeling the impacts to the Delta of implementing the ISDP. The SWRCB feels that these five years provide a reasonable study for comparison between water year types on the lower San Joaquin River.

Comment: [page 14-28] Absolute descriptions used in the DO analysis can be misleading if model limitations, estimates of relative accuracy, and estimates of relative error were not previously described for the model results being analyzed. (DWR)

Reply: Chapter 4 of the EIR describes the models used and discusses their limitations. The descriptions of the modeling results in Chapter 10 are not intended to be "absolute descriptions" of various modeled alternatives, and therefore the text has been revised as noted.

Comment: [page 15] Consideration should be given to running the Stockton San Joaquin River model for the period August through November so that the "warm up period" for the model occurs before the beginning of the primary period of concern (September through November). The preferred alternative should then be assessed using this modeling approach. (DFG)

Reply: There is no "warm up period" for the model, but there is a 2-3 day period when simulations are begun that may produce results at a lower level of accuracy than those results produced for the rest of the simulation. This condition should not have a significant impact on results of the analysis. The text has been revised. The SWRCB believes the model results reasonably reflect the environmental impact expected as a result of the proposed actions.

Comment: [page 15] The comparisons of the alternatives are difficult to interpret because Vernalis flows, barrier operation, and wastewater loads were all different. For example, only Alternative 3 included permanent head of Old River barrier operation. While the temporary barrier and permanent barrier are both simulated to be closed for September-November and April-May, the hydrodynamic simulation of the temporary barrier allows about half of the flow to still be diverted into Old River. The flows at Stockton are, therefore, different for Alternatives 1, 2, and 3. Simulated flows are the same only for Alternatives 2 and 4 (both with temporary barrier, 50 percent of Vernalis flows). (Stockton)

Reply: Alternative 4 has been remodeled with the operation of a permanent barrier at the head of Old River. Simulated flows are the same for Alternatives 3 and 4 (both include permanent barriers). The modeling results are discussed in the FEIR.

Comment: [page 16] The DEIR shows a series of figures to show the simulated minimum DO for various hydrological year types and management alternatives. The reader may be tempted to make a comparison of the results for dry and wet years and find that the minimum DO for the dry year is better than the minimum DO for the wet year. Without some additional explanation, the reader may

conclude that dry year (low flow) is better than wet year (high flow). Therefore, Stockton suggests adding a paragraph after the second paragraph on page X-22.

"It is to be noted that the flow in the Lower San Joaquin River is highly regulated by the upstream reservoirs. For that reason, a wet year does not necessarily mean a higher stream flow, during the critical summer months. The minimum DO for a dry year may be higher than the minimum DO for a wet year." (Stockton)

Reply: The text has been revised to read "the flow in the lower San Joaquin River is highly regulated by the upstream reservoirs. For that reason, a wet year does not necessarily mean a higher stream flow during the critical summer months. The minimum DO for a dry year may be higher than the minimum DO for a wet year."

Comment: [page 16-21] Alternative 1 (1978 Bay Delta Plan) which theoretically provides the least dissolved oxygen benefits is often higher than Alternative 2 (1995 Bay/Delta Plan) during the late summer and early fall months. The FEIR should provide a brief explanation for this. (DWR)

Reply: As stated in the DEIR on the last line in the fourth paragraph on page X-28, the modeling results show that implementing the 1995 Bay/Delta Plan does not significantly affect DO concentrations. In addition, there are times when flows under D-1485 conditions are higher than flows under the 1995 Bay/Delta Plan. The report entitled "Evaluation of Alternatives to Meet the Dissolved Oxygen Objectives of the Lower San Joaquin River" prepared for the City of Stockton found that under negative flow conditions, water from the lower San Joaquin River (which has higher DO concentrations) could improve DO concentrations at some upstream locations.

Comment: [page 28] Page X-28 describes the sensitivity study of DO to constant Stockton flow of -500 cfs, 0 cfs, 500 cfs, 1,000 cfs, and 2,000 cfs. Stockton suggests that these comparisons provide a more easily understandable evaluation of the likely effects of flow. The results from this flow sensitivity study should be shown and discussed in the FEIR. Comparative simulations of the effects of reaeration, SOD reduction, and wastewater discharge elimination with constant Stockton flows should also be included so that the relative improvements that can be achieved with flow, reaeration, reduced river loads, and reduced wastewater discharge can be more easily evaluated. (Stockton)

Reply: Results of the sensitivity analyses provided by the City of Stockton are included in the FEIR.

Section C.2. Impacts on Aquatic Resources

Comment: [page 29] The word "denitrification" should be replaced with the word "nitrification." The top of page X-29 refers to Stages III through VI to 65 mgd. Stockton is now planning an expansion to 48 mgd, with an ultimate buildout of 55 mgd. Nitrification facilities would need to be added if Stockton has to meet an ammonia discharge limit of 2 mg/l. Stockton is currently updating the RWCF master plan and an EIR will be prepared for the 48 mgd project. The EIR process is scheduled to begin in the summer of 1998. (Stockton)

Reply: Change as noted--"denitrification" will be changed to "nitrification." The second sentence on the 1st paragraph on pg. X-29 will be changed to read "Stages III through VI would expand the plant's rated capacity to 55 MGD." The last sentence, 1st paragraph on page X-29 will be changed to read "Stockton has initiated the EIR process for this project."

Section C.3. Energy Effects

Comment: [page 29] Energy Effects. Nitrification facilities would impose a significant energy demand on the RWCF, because activated sludge facilities would require mechanical blowers for aeration, and additional facilities for solids handling. (Stockton)

Reply: It is true that nitrification facilities would increase energy demands. The significance of the impact as well as potential mitigation should be discussed in the project EIR.

Section C.7. Construction-Related Impacts

Comment: [page 30; 31] Replace the word "denitrification" with the word "nitrification." (Stockton)

Reply: Change as noted--"denitrification" will be changed to "nitrification."

Section C.8. Summary

Comment: [page 31] The summary at the end of Chapter 10 should be revised. (Stockton)

Reply: The SWRCB has considered both the comments on the DEIR and evidence received during the Bay/Delta Hearing process and has revised the EIR accordingly.

Comment: [page 31] The text should acknowledge that flow manipulations alone may not accomplish dissolved oxygen levels above 6.0 mg/L in the Stockton area under any conditions. (DWR)

Reply: The summary of Chapter 10 has been revised to acknowledge that flow manipulations alone may not accomplish dissolved oxygen levels above the 6.0 mg/L objective.

Comment: [page 31] Although the Chapter acknowledges the general impact that algal blooms can have on dissolved oxygen levels in the eastern Delta, it does not emphasize the unique, local conditions that can occur as a result of blooms within portions of the Stockton Ship Channel. (DWR)

Reply: The following will be added to the second paragraph on page X-6 before the last sentence: "Compliance monitoring has shown that late summer and fall phytoplankton blooms periodically occur within the Stockton Turning Basin (at the extreme eastern end of the Stockton Ship Channel). Dissolved oxygen levels can exceed 14.0 mg/L (supersaturation) in the surface bloom area, and approach 0.0 mg/l (total anoxia) near the bottom as dead or dying algae settle out of the water column and accumulate at the bottom."

CHAPTER XI. ECONOMICS

Comment: Much of the discussion regarding economics in the DEIR and especially in Chapter XI, offers little by way of explanation and appears to expect the reader to take a lot on faith. (USDOI)

Reply: The purpose of Chapter XI is to assess regional economic impacts. Although the economic modeling results offer little detail on impacts at the local level, the discussion is adequate to assess the impacts on a regional scale.

Comment: Reductions in the water supply to agricultural and residential areas will adversely affect the economy of these regions, will lead to job losses, will change land use patterns, and will decrease food production at a time when the world population is growing while farm acreage is shrinking. The DEIR does not adequately address these impacts. (AEWSD, BWGWD, RGWD, Woodland)

Reply: The economic impacts of water supply reductions to agriculture are evaluated in Chapter XI of the DEIR. This chapter includes a discussion on potential job losses in this sector of the economy. Environmental impacts resulting from land use changes are discussed in Chapter VI. These chapters adequately address the economic impacts and the environmental impacts associated with land use changes.

Reductions in food production and consequent impacts to human nutrition are not analyzed in the DEIR because there does not appear to be a significant effect on the environment caused by reductions in food production. Further, the information provided in the comments on this specific subject fails to establish such a link.

Comment: The assumption in the DEIR that project water will be purchased by water right holders within the Sacramento Valley needs to be evaluated for its reasonableness. The significant curtailments to water right holders could result in the purchase of project water of up to 100% of the entire need during some years. Based on our review of the DEIR, the estimated average annual project water need for direct diverters on the Sacramento River could be as much as 50% of the total contract entitlements. This estimate is based on the periods of curtailment contained on the table page A3-145 of the Appendices. During 1997 the price for project water was approximately $15 per acre-foot which includes the restoration charge required under the CVPIA. If we assume an average applied water of 4 acre-feet per acre and 50% project water, this would result in an average cost of $30 per acre. The DEIR does not analyze the potential impacts, or whether these costs could be absorbed by the water right holders. (SVWU)

Reply: As noted by the commentor, the cost of CVP water in the Sacramento Valley is about $15/acre-foot. The supply-revenue functions show that the net revenue produced by an additional acre-foot of water in this area is $40-50, so it is likely that direct diverters would choose to purchase project water and continue production.

Comment: To the extent the SWRCB selects an allocation methodology for implementation of the 1995 Bay/Delta Plan which leads to reductions in the amount of water available for sale by the USBR, the effect of increased water rates on USBR water service contractors and their water users must be analyzed. (FWUA)

Reply: The economic impacts are adequately analyzed in Chapter XI. The level of detail requested by the commentor goes beyond the requirements of CEQA. The USBR is presently operating in a manner similar to the operation expected to occur under Flow Alternative 2. This operation has not resulted in substantial environmental impacts due to water pricing changes. Other flow alternatives have similar impacts on CVP water deliveries.

Comment: Chapter XI addresses "Economics" and, in particular, impacts on agricultural users. The literature cited in that chapter is limited to an undated Employment Development Department bulletin, the 1987 Census of Agriculture and two personal communications, one of which was in 1994 and one of which was in 1997. Since Chapter XI addresses the economic effects of implementing the alternatives, its conclusions are questionable in light of the lack of reliable supporting documents. (FWUA)

Reply: Although the references in the "Literature Cited" are limited to the works mentioned in the comment, the supporting documentation on which the conclusions in Chapter 11 are based are much more extensive. The impacts on agricultural users were determined using a model jointly developed by the University of California, the DWR, and the USBR; the impacts on urban water users were determined using a model developed by Larry Dale Associates. Each of these models was based on extensive reference material. Other data and reference material were taken from analysis done for the 1995 ER. Even though the "literature cited" may appear limited, the reference material for the economic analysis is thorough and reliable.

Comment: Chapter XI of the DEIR, titled "Economics," is actually a limited analysis of the potential economic impacts of implementing the various proposed flow alternatives. Nowhere, however, are the likely ecosystem or related economic benefits of the various flow alternatives even mentioned, nor such important factors as the historic and ongoing environmental impacts (or water user benefits) of water price subsidies, including the long-standing "give-away" of public water. All of these factors would, if taken into account, substantially if not wholly offset the alleged economic impacts of implementing the flow alternatives. (EDF)

Reply: The economic value of the ecosystem benefits derived from the 1995 Bay/Delta Plan are difficult to quantify, nor does CEQA require such an analysis. However, these benefits exist.

Comment: It is difficult to understand why voluntary water transfers were not looked at more broadly, and in more detail, both within agriculture and across sectors, as a readily available and cost effective measure for helping to address and mitigate potential dislocations (as well as regular market-based changes) over time. The same can be said for the lack of consideration given to investments in conservation and efficiency. They are mentioned as a potential "mitigation" in Chapter XII, but they are expressly not included in the impact analysis itself. (EDF)

Reply: Transfers hold some promise for mitigating the impact of water supply reductions, though there are many issues relating to "real water" which have yet to be resolved. A detailed analysis is beyond the scope of this EIR. The impacts from transfers must be analyzed on a case-by-case basis to have meaning. No specific transfers are being recommended in this document. Petitions to the SWRCB to transfer water must comply with CEQA before they are approved. The comment also points out that the DEIR did not address the impacts of water conservation measures. Conservation measures are a response to a water supply impact and need not be addressed in the manner suggested.

Comment: Chapter XI and other provisions of the DEIR which rely on the analysis of Alternative 5 should be revised to address the "corrected" modeling of Alternative 5.

The DEIR must fully consider the economic, sociological, human and environmental effects of any loss of water within the Friant Division, as well as the potential impacts on the already overdrafted groundwater supplies within the Friant Division service area resulting from further deficiencies in surface water supplies. The DEIR acknowledges that Alternative 5 will have high impacts in all year types, and that averaged over all years the impacts of Alternative 5 are "substantially higher than any of the other alternatives." Since the modeling for Alternative 5 was "corrected" in the Revised Chapters, the analysis and conclusions in Chapter XI as well as a number of other provisions of the DEIR which rely on the conclusions reached relative to the results of Alternative 5 should be revised to reflect the changes in the Revised Chapters. (FWUA-2)

Reply: The economic analysis in Chapter XI has been revised to include the revised modeling for Flow Alternative 5 and the additional modeling for Flow Alternative 8.

Section A. IMPACTS ON AGRICULTURAL WATER USERS

Comment: [page 01] When farmland is owned by outside landowners, impacts may occur outside the region. (DWR)

Reply: Comment noted. The regional impacts presented in the DEIR are a worst case, occurring when all impacts are borne by residents of the area. Impacts to absentee landlords are likely to be dispersed.

Comment: [page 01] The economic effects of the degradation of ground-water quality and declining water tables were not addressed in Chapter XI, either qualitatively or quantitatively. If groundwater is degraded, the range of future uses would be limited or treatment costs incurred. Declining water tables increase production costs. (USDOI, SLDMWA)

Reply: Groundwater quality degradation and increased pumping costs may result in economic impacts to parties who depend on those water sources. However, economic changes resulting from a project are not treated as significant effects on the environment (section 15064(e), Cal. Code of Regulations) and do not require analysis. Where a significant physical change is caused by an economic impact, as suggested by the comment, the physical change may be regarded as significant in the same manner as any other physical change resulting from the project.

The environmental impacts of groundwater quality deterioration and decreased agricultural productivity are described in Chapter VI, Section C.11. Increased production costs of replacing surface water with groundwater are included in the economic model used in Chapter XI.

Comment: [page 01] Impacts on net revenues understate the total economic impacts of reductions in water deliveries. (DWR)

Reply: Impacts on net revenues represent the cost that reduced water deliveries will impose on farm businesses. The cost that reduced water deliveries will impose on farm workers, business supplying farms, and employees of these businesses depends on a variety of factors. These include labor markets, growth in other sectors of the economy, and the extent to which reduction in purchases by

farms leaves businesses supplying farms overcapitalized. An analysis of these issues is beyond the scope of the DEIR. However, the figures for job and income impacts in the regional impacts section of Chapter XI give an indication of the importance of these effects relative to the rest of the economy in the regions affected by the alternatives.

Comment: [page 01] For Alternative 5, the DEIR contains no information regarding the magnitude, frequency or duration of the curtailment. There is no basis upon which to determine whether senior water rights holders will have any water left, what mitigation measures are actually available to them, and hence what the economic impacts will be. In the case of senior water rights holders reliant entirely upon surface water diversions, the impacts are likely to be much more severe than predicted in the DEIR. This is exacerbated where the crops are primarily orchards. Trees can be seriously damaged or permanently lost by one years' deprivation of adequate water supply. (SVRC)

Reply: In the Sacramento Valley, a large amount of water is used to grow low-valued crops. In dry years it is likely that farmers with tree crops would be able to negotiate exchanges with farmers using water for grains and pasture. It is the SWRCB's policy to encourage such exchanges.

Comment: [page 01] The DEIR's economic analysis appears to be predicated upon curtailments to Project deliveries (see discussion of use of DWRSIM and CVPSM, pages XI-1 and XI-2.) The Association's Butte Sink properties are located in Butte and Sutter Counties, Regions B and C. The DEIR predicts certain impacts to "deliveries" in these regions. Is this also valid for senior, non-Project water rights holders such as the Association? There is no identification or explanation of this issue.

The DEIR discussion of impacts on agricultural water users further assumes that farmers will fallow acreage and change crops. It predicts that farmers will use what water they have on high-valued crops, and take other measures to mitigate the impacts. (Page XI-1 et. seq.) This "crop shifting" is unavailable and inapplicable to waterfowl habitat such as the Butte Sink. (BSWA)

Reply: The water right holders responsible for meeting the flow objectives under the different alternatives are explained in Chapter II. Under Alternative 2, the USBR and the DWR are responsible for meeting the objectives. BSWA is not listed in Table II-2, thus, BSWA's diversions should not be affected under Alternatives 3 or 4. The water right holders and reservoirs responsible for the flow objectives under Alternative 5 are listed in Table II-8. BSWA is not listed in this table and thus is unaffected by Alternative 5. Alternatives 6, 7, and 8 only affect the DWR, USBR and water right holders in the San Joaquin Basin. Thus, BSWA is not affected by these alternatives.

Since BSWA's diversions do not appear to be affected by implementing the flow objectives, mitigation measures such as crop shifting are not an issue to the BSWA. The flow alternatives could be expanded to include other water right holders. If the SWRCB expands the alternatives to other water right holders, additional environmental documentation would be prepared as required by CEQA, and the SWRCB would serve notice on affected parties.

Comment: [page 01] There are several obstacles to mitigating the effect of reduced water deliveries by shifting to high-valued crops. (DWR)

Reply: The EIR is not intended to give the impression that reduced water deliveries would be mitigated significantly by a shift to higher valued crops. The text has been revised accordingly.

Comment: [page 01] Economics, paragraph two states, "If water deliveries are reduced, farmers will likely fallow acreage and change crops. In many cases, farmers will be able to pump additional groundwater, use water transferred from other areas, use what water they have on high-value crops, and improve their irrigation systems. These actions will offset the impacts of reduced deliveries." This statement is misleading; giving the reader the impression that the effects of reduced water deliveries to farming will not be felt by the farmer, or by the small rural populations. The farmer does not have the opportunity to pass on the cost of higher priced water to the consumer. These costs are born by individuals rather than spread among the populace. The higher cost is compounded in areas where groundwater quality is degraded. The continued reliance on the lower quality water reduces the yields, and causes deterioration of soil quality. (FWA)

Reply: The text describes measures by which farmers can offset the effect of reduced water deliveries. It does not imply that there will be no losses resulting from reduced deliveries. Estimates of lost income are presented later in Chapter XI.

Comment: [page 01] The economic issues associated with CVP/SWP contracts for replacement supplies or groundwater pumping assumed in Alternatives 3 and 4 do not appear to have been addressed.

USBR economists are familiar with CVPM, which is referenced in both Chapters VI and XI, and assume it was utilized correctly. However, it is not absolutely clear whether the results of the CVPM analysis concerning falling groundwater tables and increasing pumping costs as presented in Chapter VI were carried forward into the quantification of economic impacts in Chapter XI. If the analysis was done correctly, the effects of increased groundwater pumping costs should be included in the Chapter XI analysis. Unfortunately, the textual treatment in Chapter XI is so limited that we cannot know for sure. (USDOI)

Reply: The higher cost of pumping groundwater is reflected in the supply-revenue functions used to estimate the effect of reductions in deliveries on farmers' revenues.

Section A.1. Water Supply Impacts

Comment: [page 01] The definitions of the regions used in the analysis are not clear. (SLDMWA)

Reply: The regions used in the analysis are groups of the regions used in the Central Valley Production Model. A map of the regions used in the analysis will be provided in the FEIR so that individual water districts can tell if they were included in the analysis.

Comment: [page 01] Stanford Vina is located in Tehama County, Region A. The DEIR predicts no impacts to "deliveries" in this region. Is this also valid for direct diverters of water such as Stanford Vina? There is no address of this issue. Can Stanford Vina then assume that there will be no impacts to it economically? Unless this assumption is correct, the DEIR inadequately identifies or explains the impacts to diverters such as Stanford Vina. (SVRC)

Reply: The water rights of Stanford Vina Ranch were not included in Tables II-5 or II-8 of the EIR. Accordingly, there should be no impact to Stanford Vina from Flow Alternatives 3, 4 or 5. Stanford Vina's Statements of Water Diversion and Use were listed in Enclosure 2 of the Hearing Notice.

Therefore, these rights could be included in a future water right decision but additional environmental documentation would be required.

Comment: [page 01] The economic impacts to the Tehama, Glenn, Colusa Counties area will be more traumatic when the base case is corrected (see Comment 2.) to reflect a current water delivery average (1994-1996) for the Tehama-Colusa and Corning Canal service areas (page XI-1 to XI-3). Using the earlier inaccurate water delivery figures simply downplays the impacts. (TCCA)

Reply: The economic analysis is not based on 1984-94 water deliveries. The base conditions for the economic analysis are derived from a DWRSIM operations study which shows what deliveries would be in each of the 73 years of historical hydrology under D-1485. Base water deliveries in low-delivery years are the average of deliveries in the seven years with lowest deliveries. Base water deliveries in the high-delivery years are the average of deliveries in the 36 years with highest water deliveries, and base water deliveries in medium-delivery years are the average of water deliveries in the remaining 30 years.

Water deliveries in each year type under each alternative were estimated in a similar way using an operations study for that alternative. Water delivery impacts in each year type are the difference between base water deliveries for that year type and water deliveries under the alternative.

Comment: [page 02] Modeling the average for each year type can understate impacts. The impacts are not likely to be linear even within the grouped year types, particularly in extreme shortage situations. (DWR)

Reply: Comment noted. Grouping by water year types rather than examining impacts in every individual year simplifies the analysis. An average value is just as likely to overstate as to understate the actual value for any particular year. The meaning of "linear impacts" is not clear from the comment.

Comment: [page 02] This analysis framework overlooks the problems caused by the higher probability of consecutive years of reduced deliveries and, consequently, the cumulative impact of higher production costs and lower incomes. Farmers' financial resources can dwindle rapidly under these conditions and render them insolvent. (DWR)

Reply: A series of years with low deliveries is likely to have adverse impacts on individual businesses. An analysis of the impact of the alternatives on the cash flow of individual businesses was beyond the scope of the EIR.

Comment: [page 02] There is the same uncertainty in the DEIR language in the use of the term "water deliveries", in the middle paragraph on page XI-2. Does this discussion and do the resultant impacts exclude "diversions" under private water rights? (CFWID)

Reply: The discussion and resultant impacts include diversion under private water rights.

Section A.2. Assumptions and Methodology

Comment: [page 02] Within the inherent constraints of modeling, the Central Valley Production Model may be useful in analyzing the comparative impacts of alternatives. Unfortunately, the economic impacts of those alternatives are then compared to the "real life" value of the agricultural production within the region, with the imbedded notion that overall impact to agriculture from any of the alternatives would be only a one percent loss on the average of the gross agricultural production. This characterization is wholly inaccurate and must be corrected in order not to be misleading. (FWUA)

Reply: Comment noted.

Comment: [page 02] The DEIR indicates that there will be no water delivery impacts in the Shasta/Tehama Region. (See DEIR Table XI-2.) However, Shasta County water rights holders are listed on Table II-5 of the DEIR and Enclosure 2(a) of the Notice of Public Hearing. Unless the objectives can be implemented without water delivery impacts, this is a clear contradiction. (Shasta CWA)

Reply: None of the flow alternatives result in water supply reductions in the CVPM Region A. Deliveries via the Tehama Colusa/Corning Canal are made to USBR water supply contractors. If the underlying rights of the USBR are curtailed, deliveries to this region would continue as an inbasin obligation of the USBR, to be met by storage release. See also comment by Shasta CWA referencing DEIR Ch. 11, page 03.

Comment: [page 03] For Alternative 5, the DEIR contains no information regarding the magnitude, frequency or duration of the curtailment. There is no basis upon which to determine whether senior water rights holders will have any water left, what mitigation measures are actually available to them, and hence what the economic impacts will be. (BSWA)

Reply: The reservoirs impacted by Alternative 5 are discussed in Chapter II section E.1.e and listed in Table II-7 and II-8. Regarding frequency, delivery reductions would occur yearly but the magnitude depends on the hydrology of the year. The magnitude of the delivery reductions are presented in Table XI-2 for average delivery, low delivery, medium delivery and high delivery water years. The reductions would occur for the most part in the summer months. Based on this information, the economic impacts of Alternative 5 are discussed in Chapter XI.

Comment: [page 03] There is an adverse economic impact to Delta water users by reason of the failure to meet the Vernalis water quality standard. (CDWA)

Reply: Comment noted.

Comment: [page 03] Economic impacts to Stockton and its citizens and business should be included with the economic analysis. Cost-benefit analysis should also be conducted. (Stockton)

Reply: The economic impacts to the Stockton area are included in Region G of the economic analysis. The analysis in the DEIR is sufficient.

Comment: [page 03] The DEIR states that Shasta County is in CVPM Region A, for which no impact to deliveries were identified. This conclusion is not supported. Igo-Ono Community Services District is a Shasta County party identified in Exhibit 2(a) of the hearing notice as being potentially responsible for 1995 Plan objectives. (Shasta CWA)

Reply: Other than the Shasta and Whiskeytown lake water rights of the USBR, Igo Ono Community Services District is the only water right holder in Shasta County listed on Table II-5 of the DEIR or on Enclosure 2(a) of the Notice of Public Hearing. Igo Ono has two water rights. The first, A000784 is for storage of 4,800 af between December 1 and April 1. The analysis of Flow Alternatives 3 and 4 shows that this right would be curtailed in February of 1977 and 1992. The second right, A013976, is for direct diversion of 0.8 cfs between April 1 and November 1. This right would be curtailed during the summer in approximately 80 percent of years. Curtailment of this right should have no significant impact on Igo Ono's ability to serve their District because they can rely on previously stored water. Likewise, curtailment of this right will not have a significant impact on Shasta County as a whole.

Comment: [page 04] Wet years are not typical. The FEIR should explain why this condition was apparently used as a base. (DWR)

Reply: Wet years are used as a base only in the sense that the value of an additional acre-foot of water in a year with high deliveries forms the bottom step of the supply-revenue function. As explained later in the text, impacts were estimated from water deliveries under baseline conditions in each year type.

Comment: [page 04] The value of water during a shortage depends on the values of all marginal crops grown in the region. If a shortage affects the ability of a farmer to apply a final irrigation, the value of an acre-foot of availability of water may be very high. (DWR)

Reply: The text is intended to present a simplified explanation of farmers' response to reductions in availability of water. It is reasonable to assume that farmers, when faced with delivery reductions, will shift production to higher-valued crops. The result is that an acre-foot of water is worth more than when it is applied to a lower-valued crop.

An implicit assumption in CARM is that water deliveries can be forecast accurately at the beginning of the season from snow surveys and that farmers base their plantings on these forecasts. If deliveries are curtailed below the amount forecast, growers may have to abandon a crop before harvest. However, this situation results from inaccurate forecasts of snowmelt, rather than the amount of water available for delivery. The alternatives may reduce the amount of water available for delivery, but do not affect the ability of water agencies to forecast runoff.

Comment: [page 04] Include the cost of increased groundwater pumping in the analysis of water supply impacts. (Woodland, WRAYC)

Reply: The supply-revenue functions used to estimate the effect of reduced water deliveries on revenues were developed using the CVPM. The CVPM system includes groundwater costs so the estimates of revenue impacts reflect the higher cost of groundwater compared with surface water.

Comment: [page 04] The CVPM's analysis appears to evaluate changes in water supply, while holding other aspects of the regulatory framework constant. This approach will under-estimate economic impacts if reductions in water supply increase the cost of achieving other regulatory requirements that are currently in place, or that may be enacted in the future. For example, reductions in water supply may increase the cost of achieving water quality objectives. Similarly, increased regulation of groundwater may reduce groundwater supplies, the availability of which is an important assumption in this economic model. (SLDMWA)

Reply: The characterization of the agricultural analysis is essentially correct. However, estimating the costs of achieving other regulatory requirements now or in the future is too speculative to conclude that the economic impacts are under estimated. Regarding increased costs due to increased regulation of groundwater, the economic analysis brackets impacts between two scenarios; one in which additional groundwater is available and another in which additional groundwater is not available. If implementation of the project causes increased regulation of groundwater and reduced groundwater supplies, the economic impacts still fall within the range bracketed by the analysis.

Section A.3. Results

Comment: [page 05] Address the economic impacts in the Tehama Colusa Canal service area. Attempting to contract for additional water from the USBR when diversions are curtailed is not an option of the Tehama-Colusa and Corning Canal service areas if diverters are not allowed to redirect the water into the canal. The economic impacts are drastically understated, thus making the results invalid. (TCCA, WRAYC)

Reply: The TCCA misinterprets the meaning of "curtailed diversions." The TCCA has no post-1914 appropriative rights under which its diversions can be curtailed. Because the TCCA is a USBR contractor, when the USBR's diversion rights are curtailed, the TCCA becomes an inbasin obligation of the USBR and is served with water released from storage. Thus, the TCCA should experience no economic impacts from implementing the flow alternatives. Because delivery reductions are not expected for this area, economic impacts are not expected.

Comment: [page 05] This section discusses the estimated impacts to agricultural producers from implementation of the flow-related objectives of the project. The report states that "In addition to the costs cited above, farmers in the Sacramento Valley will have to pay the USBR for contracted water to replace water that is no longer available for diversion under appropriative water rights. The cost and amount of this water will be a contract issue between USBR and the contractors." To the extent that availability of such supplies has any bearing on the magnitude of the SWP's responsibility for meeting a portion of the Plan objectives, this should be addressed in the FEIR. (MWD)

Reply: The availability of water for contracting purposes from the CVP/SWP has no bearing on the magnitude of project responsibility toward the 1995 Bay/Delta Plan objectives. See the general comment on contracting issues in Chapter II.

Comment: [page 05] Solano County and the Bay/Delta should be evaluated as separate economic units. (Woodland)

Reply: The detailed analysis requested in the comment is not possible because the resolution of the analysis is limited by the availability of supply-revenue functions derived from CVPM.

Comment: [page 05] The Draft EIR suggests that, if water shortages are created by implementation of the 1995 WQCP, marginal land will be taken out of production, thereby reducing the impacts of certain of the flow alternatives. However, the Draft EIR fails to note that the cost of land retirement can be high for producers in districts with high fixed costs, since those costs must be spread over the remaining acres of land. More importantly, that conclusion also incorrectly assumes that each affected agricultural area will have marginal land which can be taken out of production. The Friant service area is not characterized by marginal lands, and much of the service area is planted to high value, permanent crops. Many Friant districts are fully developed to permanent crops. Fallowing a vineyard or orchard is a devastating blow which can put farm families out of business (especially when, as in the Friant service area, the average farm size is well under 100 acres). The Draft EIR's assumptions about land fallowing are thus erroneous and significantly understate the potential impacts of reduced water supplies on the Friant Division. (FWUA)

Reply: The description of the measures by which growers can respond to reductions in water deliveries is included for information only. The estimates of losses in net revenues resulting from reduced water deliveries presented in Table XI-3 are based on supply-revenue functions for each region derived from CVPM runs. The CVPM system includes data on cropping patterns, so figures derived from it will reflect the way in which permanent crops limit the response to reductions in water deliveries.

Comment: [page 06] The economic and social impacts of the project must be mitigated. The economic analysis ignores the displacement of human beings in the SLMDWA service area. Towns like Mendota will experience closed businesses, losses of employment and reduced social and family structures. The EIR needs to analyze these impacts everywhere in the San Joaquin Valley where surface water reductions will occur. (BWGWD, SLDMWA)

Reply: CEQA does not require mitigation of social and economic impacts. Nevertheless, the economic analysis has been reviewed. Table XI-3 shows that for the Delta-Mendota Canal service area, net income losses will range from $1.3 million (Alternative 5) to $3.4 million per year (Alternative 7) for the 73-year period assuming no additional groundwater pumping. Table XI-5 shows recent crop production in four of the affected areas in the project area. In these areas, the net income losses from water supply reductions do not exceed one percent of the fluctuation in crop production. Although data on recent crop production is not available for the Delta-Mendota Canal service area, the situation is likely similar to the areas listed in Table XI-5. Thus, the data do not support the conclusion in the comment that implementation of the 1995 Bay/Delta Plan will result in substantial adverse effects on human beings due to the economic impacts of water supply reductions.

Section B. IMPACTS ON URBAN WATER USERS

Comment: [page 08] The analysis uses the same transfer costs for all year types. It also applies a shortage cost for residential use to the entire water shortage faced by urban water users. (MWD)

Reply: The transfer costs were based on the transfer costs used in the Environmental Report (Appendix 1) of the 1995 Bay/Delta Plan. These costs were developed by a consultant, using information provided by the planning staff of MWD and SCVWD. The estimates of shortage costs presented in the DEIR are only approximate. The issues of using different shortage cost functions for different classes of users and applying different rationing amounts on different types of users are beyond the scope of the DEIR.

Comment: [page 08] There is no analysis of impacts on urban water users in the Sacramento Basin. (Sac)

Reply: According to DWR Bulletin 160-93, throughout most of the Sacramento River Region, groundwater is the principal source of water for urban use. On a regional scale, reducing surface water deliveries is unlikely to have a significant effect on urban water use in the Sacramento River basin. If direct diversions are curtailed, water utilities in the area have a wide variety of options, including contracts, water transfers and conjunctive use.

Comment: [page 08] The DEIR appears to ignore the impacts to urban water users in Eastern San Joaquin County. (See Table V-1 and V-2.) (CDWA)

Reply: Implementation of the flow alternatives result in reduced deliveries to the Stockton East Water District which impacts the water supply to the City of Stockton. The exact magnitude of the impact cannot be assessed because DWRSIM output lumps deliveries of the Stockton East Water District with the Central San Joaquin Water Conservation District. Economic impacts of reduced deliveries to Stockton are likely within the range estimated for the Santa Clara Valley Water District.

Section B.1. Methodology

Comment: [page 08] Water utilities in Southern California are able to increase their use of recycled water. The most cost-effective response to reduced SWP deliveries is likely to include increased water recycling. (DWR)

Reply: Comment noted.

Comment: [page 09] The impact on overall regional water management planning is not taken into account using this method of analysis. Without understanding the operational opportunities afforded by the availability of imported and local surface supplies, local groundwater supplies, local carry-over storage and groundwater banking capacity and local contingency water transfers to manage reliability, any estimate of the economic impacts of changes in surface water availability are likely to be seriously biased. DWR uses a yearly time-step local water management simulation framework based on a least-cost planning objective to estimate the economic consequences of changes in the availability of imported water supplies in view of the cost and effectiveness of all feasible local long-term and shortage contingency water management options. This approach is also being used for CALFED storage and conveyance facilities screening. (DWR)

Reply: The results presented in the DEIR are based on results developed with forecasting models used by the major water suppliers. The costs presented in the DEIR define the limits of a range in the costs resulting from the alternatives. The scenario in which the entire reduction in water deliveries is replaced by water transfers represents the low end of the range and the scenario in which the entire reduction in water deliveries is met by water rationing is the high end of the range. These modeling scenarios should bracket the range of economic impacts.

Comment: [page 09] The figures used for shortage costs are too high, and the DEIR does not offer sufficient explanation of the economic modeling of impacts of urban water shortages. (USDOI)

Reply: The figures used in the DEIR are consistent with shortage costs used in the DWR's Economic Risk Model and the results of a study of the effect of penalty charges on water use in Los Angeles. Although these figures are based on very sparse information, there appears to be a consensus that the shortage costs resulting from water rationing are in the order of $1,000 to $2,000 per acre-foot.

For additional documentation regarding the modeling done for the economic analysis, consult the reference cited in Chapter XI (a copy of which is available in the SWRCB files).

Comment: [page 09] The DWR uses different values for shortage costs than those used in the DEIR analysis. (DWR)

Reply: Very little information exists on the loss to the public resulting from reducing water use below desired levels. Any estimate of shortage costs is only very approximate. The figures used by DWR are reasonably close to those in the DEIR.

Comment: [page 9] The Draft EIR's assumptions on the costs of transferred water to EBMUD are inaccurate. The analysis in the Draft EIR assumes that costs and impacts of water transfers to EBMUD will be equivalent to those of the Santa Clara Valley Water District (SCVWD). This comparison is not valid because EBMUD's existing water treatment facilities are significantly different from those of SCVWD. Treatment costs associated with water transferred to EBMUD could be substantially in excess of the $250 to $350/AF referenced in the DEIR, depending on the source of water transferred to EBMUD. (EBMUD)

Reply: Given that SCVWD and EBMUD are generally in the same area of the state, it is reasonable to assume that the cost of transferred water would be about the same for EBMUD as for SCVWD. An analysis of how the substitution of transferred water for water from EBMUD's other sources would affect treatment is beyond the scope of this EIR. Since water is fungible, it is possible that EBMUD could avoid impacts on its treatment operations by continuing to use water from its existing sources and using the transferred water for flow requirements in the Delta.

Section C.1. REGIONAL ECONOMIC IMPACTS, Job and Income Impacts

Comment: [page 11] In the Tehama-Colusa Canal service area, there is very little economic activity other than agriculture, so there are few opportunities for workers displaced as a result of cutbacks in water deliveries. (TCCA)

Reply: Impacts in this area are minimal. Under Alternative 5, modeling indicates that there will be a loss of 20 jobs in agriculture and 30 jobs elsewhere in the economy in the driest 10 percent of years. To put these figures into context, total employment in Tehama and Colusa counties averaged 29,000 in 1997.

Comment: [page 11] Impacts reported on a region-wide basis can mask more serious economic impacts in particular areas. (DWR, FWA, SL&DMWA)

Reply: The job impacts of the alternatives are very small compared with total employment in the regions affected by reductions in water deliveries. It is possible that these impacts will be concentrated in particular communities, and that there may be obstacles to movement of workers to jobs in other parts of the region. However an analysis of these local issues is beyond the scope of the

DEIR. The extent to which impacts will be concentrated in particular communities depends on the exact location of the acreage that will be fallowed. This in turn depends on water transfers negotiated within the regions in years when deliveries are cut back. The way that fallowing will affect individual communities depends on the structure of the rest of the local economy and the extent to which employment can shift within the region by migration or increased commuting.

Comment: [page 11] The use of non-crop specific averages to estimate employment impacts leads to a misstatement of the impacts. (MWD, DWR)

Reply: Payroll-to receipts ratios in agriculture range from about 11 percent for farms primarily growing grains to about 32 percent on farms growing vegetables and tree crops. The figure used in the DEIR is in the middle of this range. Although there is a trend toward higher-valued crops, farmers will tend to reduce production of the lower valued crops with lower labor use when facing water shortages.

Comment: [page 11] The DEIR underestimates the economic impacts of the alternatives for the following reasons:

1. The impacts in the EIR are based on runs of the California Agricultural Production Model (CARM). The model results indicate long-run adjustments to reductions on water deliveries and do not model year-to-year changes in farm operations
2. The California Agricultural Production Model does not take into consideration farm-level financing issues.
3. An estimate of the impact of the alternatives on land values is needed to assess the impact of the alternatives on individual businesses. (SL&DMWA)

Reply: Estimating the impacts of the flow alternatives with a comparative statistics approach using the California Agricultural Production Model is a simplification which does not capture the effect that a series of low-delivery years will have on farm operations. However, it is impractical to do year-by-year model runs needed to assess short run adjustments occurring during a series of low-delivery years. Analyzing the impact of the flow alternatives on individual farm operations is beyond the scope of the EIR. The results are intended to give an estimate of the impact of reduced deliveries on the region as a whole.

Section D. SUMMARY

Comment: [page 16] Reduced reservoir levels are likely to affect recreation on Lake Shasta. There is no discussion of the economic impacts of reduced recreation. (Shasta CWA)

Reply: The effect of changes in reservoir operation on recreational opportunities is discussed in Chapter VI. An assessment of the economic impact of these changes cannot be made without good information on how changes in water levels affect attendance and visitor spending. Although it is likely that recreational use will fall if water levels are lower as a result of changes in reservoir operations, insufficient information exists to quantify this effect.

Comment: [page 16] Rural communities rely heavily on agriculture and related industry with few employment opportunities if agriculture is cut back. California produces nearly half of our nation's agricultural products and ranks among the top ten food producing nations; it is a gross understatement

to say that "although these job losses may cause individual hardship and may affect some communities adversely, they are too small to have any significant regional impacts...". (TCWA)

Reply: Comment noted.

CHAPTER XII MANDATORY FINDINGS UNDER CEQA

Section A. CUMULATIVE IMPACTS

Comment: [page 01] The DEIR's Cumulative Impact Analysis should be updated. The DEIR lists 20 pending actions that may compound or increase the environmental impacts of the Project. It acknowledges that those actions are at various stages of development. It uses only a few of them in modeling their effects on hydrology because "insufficient detail is available" as to the others. It ignores construction-related impacts altogether (p. XII-1). Given the limited basis for the cumulative impact assessment, any additional information that becomes available should be reviewed and analyzed for inclusion in the EIR.

Since the preparation of the DEIR, a number of significant actions that could have cumulative effects on the Delta have been taken or announced by other agencies. Those actions should be reviewed and considered as to their effects on the DEIR's assumptions, its analysis of impacts, its formulation of alternatives and its assessment of cumulative effects. (BWGWD)

Reply: Revisions have been made to update the description of several of the cumulative impact projects and, to a certain extent, the assessment of their cumulative effects has been revised as well. However, insufficient progress has been made in refining the details of other actions to justify the inclusion of those actions in the modeling studies.

Comment: [page 01] The cumulative impact analysis is inadequate. The list of projects for which cumulative impacts were identified is incomplete and the project descriptions are out-of-date. Furthermore, all of the State and federal projects that have similar impacts as the proposed project should be identified and analyzed together. Lastly, the modeling studies should be revised to include projects which have been refined to provide sufficient detail. (Butte Co., BWGWD, CCWD, DWR, DFG, SJRG, SLDMWA, Woodland, WRAYC, WWD)

Reply: The section on future actions with potential for cumulative impacts has been revised. The discussion of several actions previously included in the section has been updated and other actions have been added to the discussion.

There was insufficient information available to do a quantitative analysis of the cumulative impacts of most of the actions which were considered, including many of the State and Federal programs which may affect the availability of surface water supplies in the Sacramento and San Joaquin basins and export areas or the actions that may affect the operation of the SWP and CVP. Projects for which there was sufficient information were included in the hydrologic modeling, as described in Section A2 of the chapter. A summary of the project impacts was included for each of the future actions with potential for cumulative effects. The discussion of the project impacts has been revised for many of the actions.

Comment: [page 01] Related SWRCB actions/foreseeable projects. As noted in the December 5th notice of hearing for the Bay/Delta Water Quality proceeding, the SWRCB will be considering a petition for changes in points of diversion, and a petition for a consolidated and conformed places of use for CVP project water. The potential environmental impacts associated with these related projects are not discussed in the DEIR, despite their direct relationship to the Bay/Delta Plan Project. (Shasta CWA)

Reply: Chapter XIII of the DEIR discusses the potential environmental impacts associated with the combined use of points of diversion. The combined use of points of diversion, limited only by the physical capacities of the pumping plants, is also included in the assumptions in modeling the hydrology for the Cumulative Impact Analysis.

The consolidated and conformed place of use for CVP project water is the subject of a separate DEIR which addresses the potential environmental impacts associated with a proposed change in the USBR's water right permits. The demand assumptions for modeling the flow alternatives and the cumulative impacts include the current deliveries of the CVP and would not be changed by the modification of the terms for place of use in the USBR's water rights that is being considered.

Section A.1.b. Future Actions with Potential for Cumulative Effects, CALFED

Comment: [page 01] It is not clear how the SWRCB works within the CALFED structure. (WRAYC)

Reply: The SWRCB is a member agency of CALFED. However, implementation of the 1995 Bay/Delta Plan by the SWRCB is a process that is independent of but parallel with the CALFED plan to address the ecosystem, water quality, and water supply problems in the Sacramento-San Joaquin Delta.

Comment: [page 03] CALFED's alternatives have the potential to significantly impact water quality in the south Delta if a Dual-Conveyance alternative is implemented without reducing agricultural drainage to the Delta from the San Joaquin River or leaving sufficient south of Delta export pumping to remove San Joaquin and Delta island drainage. (CCWD)

Reply: The conveyance elements of the CALFED program do have the potential to affect water quality in the Delta channels. The discussion of the project impacts has been revised to reflect this.

Section A.1.c. Central Valley Project Improvement Act (CVPIA)

Comment: [page 03] The statements in the DEIR about the mandates of the CVPIA are incorrect. The language is not consistent with the CVPIA Section 3406(b)(2) or the Department of the Interior's November 20, 1997, Administrative Proposal on the Management of Section 3406(b)(2) Water. The text should be revised and the proposal for allocation of the 800 TAF for environmental purposes should be described and its impacts briefly assessed. (CCWD, USDOI, DWR)

Reply: The text in the discussion of the CVPIA measure to dedicate water for environmental purposes has been revised to be consistent with CVPIA Section 3406(b)(2)(C).

Section A.1.d. Conjunctive Use Programs

Comment: [page 04] The section on conjunctive use seems to be a description of the groundwater portion of the Supplemental Water Purchase Program. It should be rewritten to indicate that DWR is cooperatively exploring the potential to increase SWP dry year supply with local agencies. Surface water would be made available from the SWP for in lieu recharge in wet years and in dry years the

local agencies would release a portion of their surface water to the SWP and substitute stored groundwater. The reference to a DEIR should be deleted. Although, conjunctive use projects could inadvertently result in limited land subsidence, this should probably not be seen as a cumulative impact. (DWR)

Reply: Revision made to text as suggested. The SWRCB assumes that the lead agency for any proposed conjunctive use program will prepare any required environmental documentation.

Section A.1.e. Delta Wetlands Project

Comment: [page 04] The discussion of the project impacts of the Delta Wetlands Project should also note the significant impacts on Delta water quality, in particular the drinking water supply for urban water agencies (including CCWD) which divert water from the Delta. CCWD and the California Urban Water Agencies testified at length on this topic at the Delta Wetlands Water Rights Hearings before the SWRCB in July and August of 1997. The DEIR should incorporate that record by reference. (CCWD)

Reply: The discussion of the environmental impacts associated with the Delta Wetlands Project has been revised to note that the project could have a significant effect on water quality in the Delta. It is not necessary to incorporate by reference the record of the Delta Wetlands Water Rights Hearings into this EIR.

Section A.1.g. Folsom South Canal Connection Project

Comment: [page 05] In the discussion of EBMUD's Folsom South Canal Project, under "Project Impacts" the statement that "water supply reliability will be improved for project areas south of the Delta" is incorrect. Modeling results presented in the EBMUD/USBR DEIR/EIS show that EBMUD exports from the American River will reduce the water supply reliability to areas south of the Delta, especially to CVP exporters. Even without these modeling results, it is logical to expect that any reduction of Delta inflow resulting from additional exports from the American River, will reduce water supply reliability south of the Delta. (CCWD)

Reply: The discussion of the project impacts has been revised. The intent of the statement referred to in this comment was to point out that water supply reliability would be improved for EBMUD's service area.

Comment: [page 06] In the section on future actions with potential for cumulative effects, the description of EBMUD's Folsom South Canal Connection Project incorrectly cites that, "The American River diversion would present risk to fish of impingement and entrainment at diversion facilities." Since delivery to EBMUD of its contract entitlement by the USBR through the Folsom South Canal would use existing USBR facilities, no additional impact to fish is anticipated. (EBMUD)

Reply: The additional impact would occur as a result of the new and additional diversions through the existing facilities if EBMUD begins taking its contracted entitlement through the Folsom South Canal at Nimbus.

Section A.1.i. Interim South Delta Program (ISDP)

Comment: [page 06] The purposes of ISDP as stated in the DEIR are not the ones stated in the DEIR/EIS for ISDP. The FEIR should be revised to state ISDP's purposes as: "The DWR, USBR, and the U.S. Army Corps of Engineers have identified the following two project objectives or purposes: 1) improve water levels and circulation in south Delta channels for local agricultural diversions; and 2) improve south Delta hydraulic conditions to increase diversions into Clifton Court Forebay to maximize the frequency of full pumping capacity at Banks Pumping Plant. These project objectives or purposes were developed following consultation between the three agencies." (DWR)

Reply: Revision made to text as suggested.

Comment: [page 07] 3rd paragraph. Change the word "barriers" to "flow control structures" (Cheeseman)

Reply: According to the DEIR for the Interim South Delta Program, the proposed project includes a fish control barrier and three flow control structures. The section referenced in this comment has been revised to reflect the project description in the ISDP DEIR.

Comment: [page 07] Edit the remaining portion of the 1st paragraph as follows: "The program also calls for operating the SWP pumps at full capacity; installing additional forebay intake structures; and limited channel dredging along a 5-mile reach of Old River." (DWR)

Reply: Revision made to text as suggested.

Comment: [page 07] Edit the 1st line of the 1st paragraph as following and add it to the end of last paragraph on page XII-6: The DWR and USBR are proposing the installation of three permanent flow structures and one fish control structure through the ISDP. (DWR)

Reply: According to the DEIR for the Interim South Delta Program, the proposed project includes a fish control barrier and three flow control structures. The section referenced in this comment has been revised to reflect the project description in the ISDP DEIR.

Section A.1.j. Los Banos Grandes Reservoir

Comment: [page 07] The section on Los Banos Grandes creates the inaccurate perception that this is an active DWR project and that numerous other south-of-the Delta projects are being investigated by DWR. This is not the case and this section should be deleted. This discussion would be better placed in the section on CALFED, which is considering south of the Delta storage. (DWR)

Reply: The discussion of Los Banos Grandes as a specific project will remain, but the FEIR will be amended to note that, while CALFED has included LBG along with other south-of-the-Delta off-stream storage facilities under consideration, DWR is not actively studying this project at this time. DWR will be listed as the lead agency as they have conducted the detailed investigations to-date and would likely be heavily involved if this project were to proceed. Revision made to text.

Section A.1.n. Pardee Reservoir Enlargement Project

Comment: [page 09] Page XII-9 of the DEIR describes EBMUD's alternative Pardee Reservoir Enlargement Project. The project description should be supplemented to note that no environmental documentation is planned to occur on this project in the near future. The second sentence of the description of potential project impacts should be revised to read: "These exports may decrease overall Delta inflows from the Mokelumne River; however, minimum instream flows for the lower Mokelumne River would not decrease, but would be expected to increase due to the gain-sharing provision of the Mokelumne River Joint Settlement Agreement approved by the Resource Agencies and EBMUD." (EBMUD)

Reply: Revision made to text.

Section A.1.o. Purchase of Delta Islands

Comment: [page 09] The program described as the purchase of Delta Islands is more correctly called the West Delta Program. One component of the program, which is not described in the SWRCB's DEIR, is that the purchased lands can be developed into habitat for mitigation of future SWP facilities construction and operation. (DWR)

Reply: Revision made to heading and text.

Section A.1.r. Sacramento Water Forum Process

Comment: [page 10] The Sacramento Water Forum process is identified as one of the future actions with potential cumulative effects. The discussion and description of this process is somewhat outdated. If the DEIR for the Water Forum agreement is released prior to implementation of the 1995 Bay/Delta Plan, we recommend that this document be used to update the Plan EIR's summary and discussion of the Water Forum process. (Sac)

Reply: The description of the Sacramento Water Forum process has been updated.

Section A.1.s. State and Federal ESA

Comment: [page 12] The discussion of the state and federal ESA should be modified to reflect the possibility that the spring-run chinook salmon may be listed as endangered by the Fish and Game Commission later this year. (DFG)

Reply: A reference to Table III-27 was added. Table III-27 identifies all fish species listed or proposed for listing under the state and federal endangered species acts. Spring-run chinook salmon were listed as threatened under CESA in 1998. The following sentence has been added following paragraph 3: "The listing of spring-run chinook salmon under CESA in 1998 may result in additional changes in water resources requirements."

Section A.2. Cumulative Impact Assessment

Comment: [page 13] The cumulative impact analysis assumes a "2020 level of development", which is inconsistent with the analysis of "existing conditions" in the DEIR. (Shasta CWA)

Reply: The cumulative impact analysis does use 2020 level of development in comparing the combined effects of the cumulative actions to the Base Case (existing conditions) and full implementation of the Bay/Delta Plan, which were modeled using the 1995 level of development. However, it seems reasonable to consider the change in the level of development as part of the cumulative effect of related projects since some of the projects may not be completed for a number of years. It is unlikely that modeling the existing conditions at the 2020 level of development would have produced significantly different results for the analyses that were performed.

Comment: [page 13] The DEIR uses present level of development only. This ignores future implications of present decisions. The DEIR should use 2020 and 2050 levels of development to show the ramifications of implementing each alternative on the California of the future. (RCRC)

Reply: The cumulative impact analysis uses 2020 level of development in comparison of the difference in impacts from full implementation of the 1995 Bay/Delta Plan at the 1995 level of development. There is insufficient information available to reasonably model the 2050 level of development. The cumulative impact analysis assumes full compliance of the 1995 Plan, and it is adequate to comply with CEQA.

Comment: [page 13] Hydrology is modeled at the "present" (1995) level of development. Model assumptions should be based on depletions caused by future levels of development (TCWA)

Reply: Federal and State law require that water quality objectives be periodically reviewed for adequacy. These objectives were revised in 1995 to address existing conditions. The action currently before the SWRCB is how to implement those objectives; consequently, the principal purpose of the EIR is to analyze the effect of the alternatives for implementing the 1995 Plan under existing conditions. The SWRCB has included an analysis of the cumulative impact of this project and other projects at the 2020 demand level in Chapter 12.

The SWRCB is aware that modeling assumptions may change and that modeling results contain inherent uncertainties. The EIR emphasizes that modeling results must be interpreted with care and full consideration of the modeled conditions, assumptions, and reliability of input data. Nevertheless, the assumptions used are, in the SWRCB's view, the most reasonable assumptions at this time.

Section A.2.a. Delta Exports

Comment: [page 13] Under "Delta Exports" the last sentence states that other project exports including the Contra Costa Canal, North Bay Aqueduct and the City of Vallejo are not included in export/inflow ratio calculations. I believe that this is incorrect. My understanding is that the 1995 Bay/Delta Plan includes the Contra Costa Canal and the North Bay Aqueduct. The City of Vallejo intake is inactive. (SCWA)

Reply: The 1995 Bay/Delta Plan defines the combined export rate used in calculating the E/I ratio as Clifton Court Forebay inflow minus actual Byron Bethany diversion plus export at the Tracy

pumping Plant (footnote 20). The fact that the City of Vallejo intake is presently inactive is irrelevant to a discussion of cumulative impacts. The City holds a water right, which is listed on Table II-5 of the EIR, for direct diversion of 31.52 cfs from the Delta. This right could be exercised at any point in the future. The modeling assumes an average annual diversion of 16 TAF.

Comment: [page 14] The DEIR identifies significant cumulative impacts associated with its action. For instance, for the 73 Year Period modeled, the change from the no-project condition is a reduction in average exports of 276 TAF. However, for the cumulative impacts analysis, exports increase an average of 735 TAF over the no-project condition. These increased diversions and associated cumulative impacts should be more fully analyzed and mitigation measures developed to reduce those impacts to less than significant levels. (DFG)

Reply: The analysis of the cumulative impacts shows that average annual exports increase 459 TAF over the no-project condition and 735 TAF over the 1995 Bay/Delta Plan which were modeled at the 1995 level of development. The increase in average annual exports is the maximum possible with the assumptions made for the cumulative impact analysis. Those assumptions, as described on page XII-13, include full compliance with the 1995 Bay/Delta Plan, as well as: (1) the ISDP in place, including SWP Banks Pumping Plant capacity of 10,350 cfs; (2) combined use of points of diversion allowed for the SWP and the CVP, limited only by the combined physical capacities of the pumping plants; (3) Eastside Reservoir in operation; (4) Los Vaqueros Reservoir in operation; and (5) year 2020 level of development.

The implementation of the 1995 Bay/Delta Plan and the combined use of points of diversion are the subject of this DEIR and the impacts of those actions, and the mitigation measures proposed, are addressed in Chapters V, VI, and XIII. The SWRCB believes that the analysis of the combined effects of these actions, together with the other projects included in the assumptions, is adequate and that development of mitigation measures to reduce the impacts of the other actions is outside the scope of this EIR. General actions that may be taken to mitigate the effects of reductions in water supply are discussed in section XII.B. Those same actions could help reduce the total amount of water required as export from the Delta.

Section A.2.d. Delta Outflow

Comment: [page 17] Data regarding Delta outflow, salmon, and salinity should also be provided to illustrate information for individual years so that significant adverse impacts for these parameters are avoided. (DFG)

Reply: The 73-year average, critical period average, and water-year-type averages are representative of relative impacts associated with the various flow alternatives and the cumulative impacts. However, the data for the hydrology and salinity analyses are available to the public through DWR's website. The data for the analysis of impacts to salmon are contained in Volume 2, Appendix 2 of the DEIR.

Section A.2.e. Fisheries

Comment: [page 18] Average pumping under the cumulative impact scenario not only would exceed levels allowed under the 1995 Bay/Delta Plan, but would also exceed pumping levels allowed under D-1485. Additional pumping allowed by the combined use of the pumps in the southern Delta

would have a huge effect on the food web of the Delta. It would have deleterious effects on salmon smolt survival and would devastate striped bass. The extra diversion will not only cause a striped bass population decrease of 24% from Alternative 2, but is 20% worse than D-1485. Additional extractions will cause substantial impacts to public trust values, but the DEIR understates this and a lay reader of the DEIR would not know the degree to which additional exports under the cumulative impacts scenario will degrade conditions further. (RCRC)

Reply: Comment noted. The cumulative impact analysis identifies the fact that exports increase due to increased export capacity and increased demands.

Comment: [page 19] The cumulative impact assessment indicates that San Joaquin salmon smolt survival will decrease from the baseline in the future as exports increase. The EIR fails to indicate whether or not the impact to salmon is significant, and if so, it fails to identify appropriate mitigation. (SFPUC, SJRG)

Reply: The cumulative impacts assessment did not indicate that smolt survival will decrease from the baseline "no project alternative". There is a slightly lower survival index for the cumulative impact alternative compared to the Bay/Delta Plan when the Head of Old River barrier is installed. However, this difference does not appear to be significant and will not require mitigation.

Comment: [page 19] Figure XII-3 and XII-4. The first two bars are not distinguishable from each other in the legend/graph. (DWR)

Reply: Figures XII-3 and XII-4 have been revised for the FEIR.

Comment: [page 20] The Cumulative Impact Assessment for striped bass shows that Joint POD alternatives that allow additional export would result in population decreases of 20% from present conditions and 24% from conditions expected to exist as a result of the implementation of the 1995 Bay/Delta Plan without implementing a Joint POD alternative. (Figure XII-5) This information should be highlighted and fairly analyzed to support the DEIR's finding that this population reduction is considered significant and "is caused by increased exports and reduced outflow that occur under cumulative impact conditions." (RCRC)

Reply: A different method of analysis was used in the FEIR to evaluate the effects of the cumulative impact conditions on striped bass. Predicted indices of young-of-the-year striped bass abundance were lower under the cumulative impact conditions than the 1995 Bay/Delta Plan or No Project conditions. This potential impact is fully disclosed in the FEIR and appropriate mitigation is proposed.

Comment: [page 20] Last sentence of paragraph on striped bass. Modify this sentence to read: "...the effect of a stocking program on smelt...", rather than "...program for smelt..." (DWR)

Reply: Revision made to text.

Comment: [page 20] Striped Bass: The text should disclose that the issues described relative to the striped bass stocking program and potential effects on delta smelt and winter-run salmon are currently

being addressed through the Section 10 permitting process under the Federal Endangered Species Act.
It is probably not appropriate to describe the striped bass stocking program as mitigating cumulative impacts. Implementation targets were developed considering existing levels of impacts. The costs of carrying out the program to address additional losses due to cumulative impacts should be reimbursed by the SWP and CVP as part of the water rights process. (DFG)

Reply: Revision made to text. An additional sentence is included to clarify that the impacts of striped bass stocking program on winter-run and delta smelt are being addressed under the Section 10 permitting process of the ESA. The reference to the striped bass stocking program mitigating cumulative impacts has been removed. A new sentence states "Striped bass losses due to cumulative impacts could be mitigated through funding of additional stocking. "

Comment: [page 21] The cumulative analysis contains insufficient information to determine or evaluate the appropriateness of demands assumed for the American River Basin. Even if the approach to conducting the cumulative analysis were considered appropriate, the analysis of the impacts to upstream aquatic habitat was conducted at only one point on each of two river systems, which disregards the potential for impacts at other locations on these rivers, and completely overlooks potential impacts on the other six rivers potentially affected by this project.

Moreover, the cumulative impact analysis of the impacts to upstream aquatic habitat compares ratios for the cumulative impact, the 1995 Bay/Delta Plan, and the No Project conditions. CEQA requires an analysis of reasonably foreseeable future conditions without the project (CEQA Guidelines Sec. 15126 (d) (4)). Although a comparison was done between the No Project alternative and the 1995 Bay/Delta Plan, both of these assume 1995 level of demand. A comparison should have been made between a future No Project condition and the Cumulative Impact condition. Additionally, there is no disclosure of what part of the cumulative impact is due to the implementation of the 1995 Bay/Delta Plan. (PCWA-1)

Reply: The level of demand assumed for the cumulative impact assessment (2020 level of development) is derived from Department of Finance population projections and incorporated by the DWR into its DWRSIM model. The analysis of the cumulative impacts to upstream aquatic habitat looks at a single point each on the Sacramento and San Joaquin rivers because these points are considered to be representative for demonstrating the combined effects of the cumulative actions.

The DEIR adequately discharges the SWRCB's CEQA obligations. The best predictions that could be made at this point regarding 2020 level regulatory conditions if the SWRCB fails to act (No Project condition) is that the SWP and the CVP would be required to meet objectives similar to the objectives in the Bay/Delta Plan pursuant to ESA biological opinions. This regulatory condition is the same as the Cumulative Impact condition.

Section B. MITIGATION MEASURES

Comment: [page 33] Bulletin 160-98, the California Water Plan Update, published by the Department of Water Resources, states California is overdrafting groundwater statewide by 1.6 million acre feet per year. Bulletin 160-98 also states that groundwater overdraft is expected to increase about 10% by the year 2020. We recommend the DEIR be revised to:

1. Be consistent with information provided in Bulletin 160-98

2. Address area of origin water rights
3. Recognize that water transfers must comply with local government ordinances
4. Address overdraft and subsidence potential in the vicinity of Woodland and its levees
5. Allow no surface water reallocations, transfers, or groundwater substitutions in areas with significant subsidence or subsidence potential
6. Address solving Delta problems by reducing exports from the Delta
7. Address the possibility of meeting Delta flow objectives by means other than reducing surface water allocations to existing water users (Woodland, WRAYC)

Reply: The recommendations above are addressed as follows.

1. The statewide overdraft value is not specific to the project area in the EIR and does not add to the discussion. Bulletin 160-98 states that groundwater overdraft in California is expected to decline from the 1995 level of 1.5 MAF per year to 1.1 MAF per year by 2020 (v. 1, p. 3-51).
2. The comment regarding area of origin water rights does not address the environmental effects of the project.
3. Water transfers must comply with all relevant laws and regulations.
4. Overdraft and subsidence potential in the Davis-Zamora subsidence area is discussed in Chapter VI.
5. The request to allow no surface water reallocations, transfers, or groundwater substitutions in areas of subsidence or potential subsidence is beyond the scope of this project and, depending on the action, may be outside of the authority of the SWRCB to approve or prevent.
6. The purpose of the proposed project is to implement the 1995 Bay/Delta Plan. The Plan contains flow objectives, which can only be addressed through the provision of flow. All of the Flow Alternatives evaluated in the DEIR result in decreased exports from the Delta compared to the no project alternative.
7. The only way to meet Delta flow objectives is to redirect water from other uses.

Section B.1.a. Conservation, Urban Water Conservation

Comment: [page 34] The Urban Water Conservation section should be updated to reflect the BMP revisions. The BMP revisions were developed and approved by the California Urban Water Conservation Council in 1997. (DWR)

Reply: The text has been revised as suggested.

Section B.1.b. Agricultural Water Conservation

Comment: [page 35] This section should discuss the agricultural MOU's completion in 1996, the Agricultural Water Management Council's formation in 1997, and its current status. (DWR)

Reply: These points are made in Section A.3 of Chapter VIII and the reference is included in this discussion.

Section B.2. Ground Water Management

Comment: [page 036] "Conjunctive use is an essential element of groundwater management." "In the future, the number of conjunctive use projects is expected to increase and become more comprehensive because of the need for more water and the higher cost of new surface water facilities." State water agencies should be far thinking and realize reliable future water needs will not be met by water transfers and conjunctive use. Off stream storage must be addressed to insure flow objectives are met. Sacrificing the environment and economies of inland areas by lowering water tables and degrading water quality should not be the answer to the re-organization of SWP's and CVP's responsibilities. No new water will be realized when water rights holders are told to cease their diversion. New storage facilities, holding winter run-off, make true "new water" available for flow objectives and insures future water supply reliability without jeopardizing the export basins. Concentrated efforts must be directed toward the development of new storage options and away from looking for the "quick fix." (Gore)

Reply: Comment noted.

Comment: [page 36] The characterization of conjunctive use programs in the DEIR may hold true for in-basin conjunctive use projects, but conjunctive use programs that provide water for out-of-basin supplies have never been adequately evaluated in a credible study. The impacts, especially potential cumulative impacts to the community, the environment, and the economy, have not been addressed. The previous evaluations of the Drought Water Bank and Supplemental Water Purchase Program assumed a one time (or intermittent short duration) operation, not perennial supplies. The perennial operation of a conjunctive use program inappropriately gives water districts power over community destinies. (VWPA)

Reply: Comment noted. Substantial evaluation of the impacts will be necessary prior to implementation of any conjunctive use program, particularly those with an out-of-basin component.

Comment: [page 36] In the first paragraph, the EIR does not explain how "effective groundwater management programs can minimize overdraft problems and provide sustainable water supplies." I am unaware of any groundwater management program that would provide such results. (SEWD)

Reply: Groundwater basin management plans to minimize overdraft can include a variety of strategies including monitoring groundwater levels and extractions, forging cooperative arrangements among pumpers to minimize problem conditions, developing conjunctive use of surface and groundwater, appropriating and acquiring water and water rights within a district, and levying replenishment and pump taxes. Groundwater management options include Water Code section 10750 plans, local ordinances, and legislative authorization for individual special districts.

Comment: [page 36] In the fourth paragraph, the EIR notes that conjunctive use programs generally promise to be less costly than new traditional surface water projects. The EIR should further explain this conclusion, and include instances where conjunctive use is needed after implementation of Bay/Delta objectives have reduced or eliminated the yield of recently constructed surface water projects, or where conjunctive use requires the construction of a dual delivery system for both surface and groundwater. (SEWD)

Reply: The DEIR explains that conjunctive use programs generally promise to be less costly than new traditional surface water projects because they increase the efficiency of water supply systems and cause fewer negative environmental impacts than new surface water reservoirs.

Designating where conjunctive use is needed is beyond the scope of the EIR. Implementing a conjunctive use program is one of several solutions to the problem of reduced surface water supplies. Decisions to construct such projects will be made at the local level and not by the SWRCB. The same is true regarding construction of dual delivery systems.

Section B.3. Water Transfers

Comment: [page 36] There should be a discussion under groundwater transfers acknowledging that all areas in California cannot take full advantage of the concept due to physical delivery constraints. (SEWD)

Reply: In Chapter XII, Section B.3 entitled "Water Transfers" the text states : "Unfortunately, water transfers are not available on a statewide basis because some regions of the State are physically isolated from water transfer facilities."

Section B.4. Water Recycling

Comment: [page 38] The DEIR identifies the development of additional water recycling projects as a mitigation measure for reductions in Delta exports. The FEIR needs to recognize Metropolitan's overall reliance on SWP supplies, particularly with regard to water management projects, including water recycling. (MWD)

Reply: The SWRCB interprets this comment to mean that the feasibility of water recycling can be dependent on the quality of the source water. The text has been modified to reflect this.

Section B.5. Combined SWP/CVP Points of Diversion in the Delta

Comment: [page 38] The section regarding combined SWP/CVP points of diversion in the Delta needs to be updated. Since CVPIA and other recent developments, the USBR does not have the "excess water supply north of the Delta." (DWR)

Reply: The USBR does occasionally have excess water supply. Revision made to text to note this distinction.

Section B.6. Offstream Storage Projects

Comment: [page 39] The FEIR should disclose that the diversion proposed under the ISDP may be unscreened thus it is likely to impact fish residing in or passing through the Delta. (DFG)

Reply: The potential impacts related to the ISDP are discussed earlier in the chapter, under the discussion of future actions. The text has been revised as suggested.

Section B.7. ISDP

Comment: [page 39] The description of why ISDP is being undertaken is incomplete and should be modified to note that it is being undertaken to improve conditions for local diverters, in addition to increasing SWP yield and operational flexibility. (DWR)

Reply: Revision made to text as suggested.

Section C. GROWTH-INDUCING EFFECTS

Comment: [page 39, 40] The DEIR states: "To the extent that historic patterns are any indication of future trends, reduced water availability is unlikely to affect growth in these [water short] areas." This is not a credible statement. (VWPA)

Reply: The statement is correct. The amount and frequency of water supply reductions are not likely to significantly affect growth.

Comment: [page 40] The FEIR should describe a process for preparation of mitigation plans or regional multi-species plans and implementation of recommended mitigation measures to offset growth-inducing impacts. (DFG-2)

Reply: The analysis of growth inducing impacts concluded that (1) implementation of the Bay/Delta Plan would result in a net reduction in water available to the SWP/CVP service areas, and (2) reduced water availability is unlikely to affect growth in these areas. Therefore, the SWRCB does not propose to include mitigation plans or measures to offset growth induced impacts to fish and wildlife in CVP/SWP service areas because those impacts are not likely to occur as a result of implementing the Plan.

Comment: [page 40] Prices for new water sources, kept artificially low, induce growth indirectly. Conservation can be achieved through pricing incentives. Conservation can achieve reduced demand thus resolving some supply "mismatches." This is not fully disclosed in this document and references to other documents are not adequate. Pricing makes individual conservation retrofits cost effective. Pricing makes creative watershed management, clean ups, and operation of small local aquifers for local needs more attractive. Pricing will help clarify tradeoffs of land use decisions for voters. (VWPA)

Reply: There is no evidence to suggest that the price of new water is kept artificially low for new development projects. However, pricing incentives can be an effective part of a conservation program as described in your comment. Conservation pricing is mentioned in Chapter XII, section B.1.a entitled "Urban Water Conservation."

Section D. RELATIONSHIP BETWEEN SHORT-TERM USES AND THE MAINTENANCE OF LONG-TERM PRODUCTIVITY

Comment: [page 40] Consideration of groundwater overdraft as a source of water supply by using "perennial yield" creates an unreasonable risk if the action is to support out-of-basin transfers. Safe

yield must be the criteria for any out- of- basin sale of "supplemental water supplies" so that impacts to "other legal water users" [groundwater users] are not masked. Available groundwater for out-of-basin supplemental supply must be calculated based on this safe yield capacity rather than perennial yield. (VWPA)

Reply: By definition, if a basin is developed to its perennial yield, overdraft will be avoided. For example, water levels in a basin may decline over a period of dry years but fully recover in the ensuing wet years. This is similar to what occurred during the 1987-1992 drought in parts of the Sacramento Basin. A temporary decline in water levels in response to a drought is not the same as overdraft.

In the EIR, the assumption that surface water reductions would be replaced by groundwater pumping was made to effect the greatest impact to groundwater resources. This was done to ensure that the document fully disclosed the environmental effects of the project. The DEIR did not evaluate any scenarios in which out-of-basin transfers of groundwater were used as a supplemental supply.

Section E. IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

Comment: [page 40] The statement in your DEIR, "land subsidence can damage surface structures, and it can result in permanent loss of aquifer capacity" implies that subsidence is to be avoided if possible. Yet DWR employees have made statements at public workshops to the effect that "contrary to common opinion, land subsidence does not change the amount of usable groundwater storage capacity." The inconsistencies expressed by DWR in public forums and those expressed in the DEIR must be addressed. The risk of subsidence caused by pumping groundwater to provide out-of-basin supplemental water supplies for these alternatives is not reasonable and therefore selling surface water out-of-basin to be replaced by groundwater is not a reasonable beneficial use. (Gore, VWPA)

Reply: The statement made in the DEIR is correct. However, the statements attributed to DWR may also be true with regard to the operable aquifer capacity for a specific conjunctive use program. Whether the risks associated with subsidence are acceptable must be decided on a case by case and area specific basis. The statement referred to in the DEIR has been revised to indicate that subsidence can also damage subsurface structures, such as wells and pipelines.

Comment: [page 41] Groundwater which is pumped as part of conjunctive use programs is pumped by diesel-fuel-powered pumps. These pumps would not incur higher electric rates that are imposed during peak power demands. (VWPA)

Reply: Comment noted. The discussion is not intended to be restricted to pumps used to pump groundwater for conjunctive use. It is intended to highlight that water supply reductions that occur as a result of the proposed project may result in the increased use of fossil fuels. This is discussed in greater detail in Chapter VI, section C7c.

Comment: [page 41] Irreversible or irretrievable impacts are listed on Page XII-41. "The most likely irreversible land use change that might occur as a result of the objectives is accelerated agricultural land retirement." Instead of accelerated agricultural land retirement, water availability must be guaranteed in the areas which need no transfers, no carriage water and produce no entrainment of fish. (Gore)

Reply: Comment noted.

Comment: [page 41] The EIR should consider actions that result in a sustainable water supply: salvaging water, off-stream storage, and conservation. When new water demands occur within a basin, other uses should be reduced. (VWPA)

Reply: Comment noted. These are actions that water right holders could take in response to reductions in water supply.

CHAPTER XIII. ALTERNATIVES FOR IMPLEMENTING THE JOINT POINTS OF DIVERSION

Comment: It is not possible to fully evaluate the fish and wildlife impacts of the various alternatives for joint points of diversion in Chapter XIII in light of the substantial interaction with the different flow alternatives described in Chapter II and evaluated in previous chapters of this DEIR. Only one of the flow alternatives (Alternative 6, San Joaquin re-circulation) included joint points of diversion but even that alternative does not represent a comprehensive look at how aquatic resources and their habitat would be affected. Alternative 6 for joint points incorporates Flow Alternative 7, and is not really a distinct joint points alternative. Follow-up analyses will be needed in order to assess the combined impacts of the individual components of a preferred alternative. Those analyses will be needed as part of the CESA consultation process and should be included in the FEIR. (DFG)

Reply: The flow and JPOD alternatives bracket a range of water management options in the Delta that could be used to meet the objectives in the 1995 Bay/Delta Plan. The environmental effects of this range of alternatives are described in the EIR. The alternative adopted will be within the range of the alternatives described in the EIR.

CEQA does not require an EIR to specify a preferred alternative (CEQA Guidelines §15120(c)). Also, DFG has indicated that CESA consultation by the SWRCB will not be required for this action.

Comment: Increased wheeling operations should be subject to conditions to minimize impacts to fish and wildlife and should be evaluated on a case by case basis. (DFG-2)

Reply: Comment noted. Joint POD Alternatives 3 - 9 allow wheeling; Alternatives 1 and 2 do not. A broad range of alternatives was analyzed to describe a wide spectrum of potential impacts. If the SWRCB approves the joint points of diversion, conditions of the approval may be established based on evidence submitted at the hearing, including the DEIR.

Comment: Revised Chapter XIII fails to analyze the impacts of the south Delta barriers on water quality at CCWD's drinking water intakes. (CCWD-2)

Reply: Chapter XIII analyzes impacts of alternatives to implement Joint Points of Diversion. The discussion of south Delta salinity barriers and their effects on water quality is in Chapter IX. Figure IX-25 has been added to Chapter IX section C.2.b, which shows the "Percent Probability of Exceedance of Water Quality Objectives at Contra Costa Canal at Pumping Plant # 1 (73-year model hydrology)." The graph compares the relative effects of southern Delta salinity barrier alternatives on salinity at Contra Costa's intakes, and supports the "No significant water quality impact" finding in section C. 2. c.

Additional information regarding the impact of the barriers on CCWD's intakes at higher pumping levels is contained in the EIR for the ISDP prepared by the DWR and USBR.

Comment: The model used in the DEIR to assess JPOD alternatives apparently utilizes CVP and SWP export and canal capacity as soon as it is available. This forces most of the JPOD use earlier in the year (for example October-January rather than spread out into February-March) when greater potential impacts to the same species (i.e. Spring-run salmon) may occur than if the JPOD use was

spread out. Reevaluation of the use of the JPOD alternatives over a wider time frame would be useful. (USDOI)

Reply: The modeling methodology employed is reasonable. The modeling assumes that the SWP and the CVP will take advantage of all opportunities to export water within the regulatory and physical constraints of the system. This assumption is consistent with the projects' historical operations.

Comment: Approval of more extensive use of the joint points for purposes other than those described in joint point of diversion Alternative 4 should be limited until it has been demonstrated that the objectives of the 1995 Bay/Delta Plan are as protective of the fish and wildlife beneficial uses of the Bay/Delta estuary as the SWRCB anticipates. Opportunities for expanded use should be evaluated on a case by case basis with primary consideration given to the status of fish and wildlife populations that may be affected. The CALFED Operations Group is an appropriate forum for such evaluations. (DFG)

Reply: The adequacy of the objectives in the 1995 Bay/Delta Plan to protect fish and wildlife beneficial use in the Delta will be reviewed in the SWRCB's triennial review process. If the objectives are not meeting the needs of fish and wildlife in the Delta, modifications can be made to the objectives.

The second part of the comment proposes conditioning approval of use of the joint point of diversion on a case by case basis to protect fish and wildlife resources. In the FEIR, mitigation measures are proposed to reduce or avoid entrainment impacts of the joint point of diversion during critical time periods. Proposed measures include switching diversions between SWP and CVP facilities if entrainment is high at one of the facilities, modification of required export/inflow ratios, re-operation of the Delta Cross Channel gates, or reduction or termination of increased exports resulting from joint use of the points of diversion.

Comment: Prior to considering any additional net exports through use of the joint points of diversion from this beleaguered system, the SWRCB must provide a scientifically credible ecological assessment of the effects of current export and depletion levels, including their cumulative and long-term effects, on essential functional and structural attributes of the Bay/Delta system (EDF)

Reply: CEQA does not require the analysis of existing conditions except as a base against which the impacts of the proposed project alternatives are assessed.

Comment: The SWRCB should not allow increased exports proposed by the DWR and the USBR in its petition for joint points of diversion in the Delta because the exports cause substantial injury to Bay/Delta resources. (SVRC)

Reply: Comment noted.

Comment: The objectives in the 1995 Bay/Delta Plan were developed without assuming the existence of the Joint Points of Diversion. The objectives should be revised to ensure that the environment is not harmed. (NHI)

Reply: The objectives in the Plan were set to protect the beneficial uses of water in the Delta. The adequacy of the objectives will be reviewed during the SWRCB's next triennial review process.

Comment: EDCWA generally supports the concept of joint points of diversion because it allows flexibility in operations for the CVP and the SWP to protect fish resources in the Delta. Although the benefit largely accrues to the Delta export users as they gain back water lost in recent years in meeting new environmental conditions, this operational flexibility should also reduce demands on the upper watershed areas to make flows available to protect fish instead of cutting back exports.

EDCWA further supports the petition in principle because a long-term resolution of the Bay/Delta water quality issues requires the cooperation of all parties to support flexible project operations while ensuring protection of water rights, especially area of origin water rights, and the environment. To this end, the joint points of diversion, properly implemented, will provide a significant benefit to the San Joaquin Valley water interests, while protecting area of origin water rights and minimizing environmental impacts. Successful joint points of diversion will demonstrate that area of origin and export interests need not conflict, and will uphold the often-expressed principle that all interests must get better together. (EDCWA-2)

Reply: Comment noted.

Comment: SDWA has no disagreement in principle with the Joint Point of Diversion proposals and agrees that it can be used to benefit both fishery and other beneficial uses. However, any such Joint Point of Diversion must be based on two premises. The first is that any efforts to insure that there is no net loss to exports for activities taken to protect fisheries must also include a no net loss or harm to other water users. The fact that the State and Federal Projects may have to forego pumping so that they do not kill as many fish as they normally would, does not mean that efforts to make up for the lost pumping should harm third parties. In light of the fact that Delta diverters consist mainly of riparians who have superior water rights to those of the projects, no net harm to third parties would appear to be not just fair, but mandated by California law. (SDWA)

Reply: Comment noted. This is a water rights issue, and will be considered in the water right hearing.

Comment: The SWRCB should consider authorizing use of JPOD only when all of the positive effects of implementation of the 1995 Bay/Delta Plan and other baseline requirements are ensured and only if adverse impacts to fish and wildlife beneficial uses of use of JPOD are fully offset by requiring benefits in excess of the 1995 Bay/Delta Plan. For instance, JPOD might be authorized if all the following conditions are met:

1. All 1995 Bay/Delta Plan objectives are being met;
2. All ESA requirements for listed and candidate species are being met;
3. All protective measures covering species of concern for which take protections are not currently in place have been adopted and are being met;
4. All Delta measures contained in an AFRP consistent with the mandates of the CVPIA are being implemented by the CVP and SWP;
5. All other regulatory and statutory obligations are being met;
6. At least 50 percent of any water pumped as a result of JPOD is dedicated to environmental enhancement (i.e., south-of-Delta water reserve account to "subsidize" export reductions to

levels less than those established by the 1995 Bay/Delta Plan and the AFRP during periods of high take);

7. Use of JPOD for any purpose is strictly limited to low-impact periods. Defining low-impact periods will necessitate further analysis, but for discussion purposes the following may apply: a) above normal and wet years; b) events in any year when outflows exceed 100,000 cfs;
8. Use of JPOD to provide water supply benefits to the CVP is subject to the 4600 cfs total instantaneous CVP water right for diversion;
9. Any potential use of JPOD to provide water supply benefits is not subject to then-existing no net loss provisions, if environmental conditions prevent actual use of JPOD. (BISF)

Reply: Comment noted.

Comment: Joint Point of Diversion operations should only be done in conjunction with the barrier program. Since the South Delta Barrier Program is not fully instituted and may not protect South Delta interests at all times, any increase in pumping must necessarily take into account the ability or existence of other measures to mitigate the effects of the pumps. (SDWA)

Reply: Comment noted. Any SWRCB authorization of joint use of points of diversion by the SWP and the CVP must protect legal users of water and not cause unreasonable impacts to environmental resources.

Section B. BACKGROUND INFORMATION ON JOINT POD

Comment: [page 01] There is a growing body of evidence that many juvenile (fry) fall-run salmon migrate/disperse from the San Joaquin Basin during heavy runoff periods from January through March, generally peaking in February. Salmon fry migrating during these time periods are impacted substantially by water exports. Although exports during these periods are generally lower under all alternatives in the DEIR, there may be potential for even greater protection if exports and the Head of Old River barrier were operated to reduce impacts. The increased export capabilities with joint points could be used at other times to meet contractual water demands. Over the 73 year period, the water supply would increase by 5-9 MAF (see page XIII-60) and the document assumes the entire benefit for agriculture. It appears there is opportunity for fish and wildlife benefits by increasing the ability to avoid Delta diversion impacts on a real-time basis through the CALFED Operations Group process and by dedicating some of the additional supply to fish and wildlife. (DFG)

Reply: Comment noted. The 5-9 MAF is a cumulative increase over the 73-year period.

The February to June exports are limited to 35% of delta inflow. Under certain circumstances, the export levels can increase to 45% with Operations Group approval. The Head of Old River barrier is already under control of the Operations Group between November and January with a maximum 45-day closure period. Other real-time changes in operations may be used under any of the alternatives to provide additional protection for San Joaquin River fall-run chinook.

Comment: [page 01] Bottom paragraph. "...The SWP can operate to its physical capacity of 10,400 cfs under limited conditions established in the agreement. ..." DWR's water right is for 10,350 (as stated on XIII-5) not 10,400. (DWR)

Reply: Revision made to text.

Comment: [page 01] Paragraph 3. "The SWP's Banks Pumping Plant operates to a capacity of 6,680 cfs based on an agreement with the U.S. Army Corps of Engineers (USCOE 1). The SWP can operate to its physical capacity of 10,400 cfs under limited conditions established in the agreement."

There are two inaccuracies in this statement. The first is that there is no agreement between the USCOE and DWR on pumping rates at the Banks Pumping Plant. PN 5820A is a statement of the historic rate of diversion into Clifton Court Forebay which is authorized by regulation (33 CFR 33Q.3(b)), and that diversion at increased rates would require Department of the Army authorization (i.e. a permit) under '10 of the Rivers and Harbors Act of 1899.

The second inaccuracy, alluded to in the previous paragraph, is that it is the pumping rate of Banks Pumping Plant that is limited. The limit is actually on the rate of diversion into Clifton Court Forebay from the juncture of Old River and West Canal. While this may translate into an average effective pumping rate of the Banks Pumping Plant from the forebay, there is no limit on the pumping rate established under PN 5820A. This inaccuracy is carried forward into discussions on pages XIII-6 and XIII-8. This language should be changed to reflect that the limit is on diversion rates, as shown in PN 5820A. (USCOE)

Reply: Revision made to text as suggested.

Comment: [page 03] Last Paragraph. The reasons stated here for withdrawing D-1630 are not consistent with the reasons given in Chapter I. The reasons should be consistently stated. (DFG)

Reply: The discussion of Background Information on the JPOD referred to in this comment does not state the reasons for withdrawing D-1630 but, rather, lists a chronology of events.

Section C. DESCRIPTION OF ALTERNATIVES

Comment: [page 05R] The discussion of Joint Point of Diversion Alternative 2 on page XIII-5 of Revised Chapter XIII states that all objectives are met for this alternative, including the Vernalis salinity objectives. The EIR needs to clarify whether the Vernalis salinity objective that is met are the objectives in the 1995 Bay/Delta Plan or a different set of objectives (such as those in San Joaquin River Agreement). (CCWD-2)

Reply: JPOD Alternative 2 assumes that objectives in the 1995 Bay/Delta Plan are met.

Comment: [page 05R] The DEIR does not integrate the flow alternatives to implement the 1995 Bay/Delta Plan with the JPOD alternatives, which could potentially bias the impact analysis. The USFWS recommends that the revised DEIR impact analysis integrate the flow alternatives to implement the Plan with the JPOD alternatives. (USDOI)

Reply: The principal purpose of the DEIR is to provide as much information as possible regarding the effects of the alternative actions that the SWRCB could take to implement the Bay/Delta Plan. Because many of the SWRCB's actions are separable, separate analyses of the actions accomplish this purpose. In any event, JPOD alternatives are integrated with four of the flow alternatives (Flow Alternatives 2, 6, 7, and 8).

In addition, the flow alternatives have similar effects in the Delta because inflows and exports do not change substantially among the alternatives. The principal difference in the alternatives is their effect on upstream areas. Consequently, the impacts of JPOD alternatives in the Delta can be reasonably evaluated using a single flow alternative that fully implements the objectives.

Comment: [page 05] The assumptions used in development of JPOD Alternatives 1 and 2 overstate the exports occurring as a result of the Joint Point because they do not include wheeling of water by the SWP to the Cross Valley Canal, Tracy Golf Course, Musco Olive, or the VA Cemetery. Not including this wheeling in the base case causes a misrepresentation in evaluation of the alternatives. The alternatives do not "increase" water supply in most cases but more correctly stated, enable the wheeling to those users.

The DEIR implies that the four entities listed above are the only existing CVP contractors. If CVP deliveries are increased by up to 247 TAF, the FEIR should disclose to whom this water is delivered if not to existing CVP contractors.

The FEIR should describe how these CVP contractors differ from the others, the quantity of water their respective contracts entitle them to receive, and what quantities have been delivered and used in recent years. The FEIR should describe whether the JPOD Alternative 3 would effectively authorize joint points for a specific annual quantity and, if so, what quantity. (DWR, DFG)

Reply: The CVP has used the SWP's pumping facility in the Delta to deliver water to the four entities (Cross Valley Canal, Musco Olive, Tracy Golf Course, and the VA Cemetery) for a number of years even though the use of the SWP's pumps for this purpose is not authorized. The purpose of JPOD Alternative 3 is to analyze the environmental effects of authorizing this existing practice. Therefore, the base case should not include these diversions.

The text on page XIII-7 was revised in the supplemental EIR and the statement " . . . when combined use is limited to deliveries for existing contracts" was eliminated. The statement should have referred to deliveries to the four CVP contractors identified in Alternative 3. Any additional water pumped in subsequent alternatives (with the exception of JPOD Alternative 4) would be allocated by the CVP among its contractors.

The text of section B of this chapter has been revised to include background information on the prior use of the SWP facilities to deliver water to the four CVP contractors identified in Alternative 3. The Cross Valley Canal contractors have a total contract allotment of 128,300 acre-feet per year. Average annual deliveries to the CVC for the period 1982 - 1993 were 75,432 acre-feet.

In modeling the project operations for Joint POD Alternative 3, it is assumed that the CVP is authorized to use the SWP's point of diversion to make deliveries to the four CVP contractors listed above. The authorized amount of wheeling through Banks Pumping Plant is 129 TAF for CVP use every year, irrespective of needs. For the 73-year period, average annual deliveries to the CVC were approximately 92,000 acre-feet

Comment: [page 05] The description of the JPOD Alternatives and the distinction between them and the flow alternatives is confusing. The JPOD should not be considered to be independent of the flow alternatives. The FEIR should include revised descriptions or a table that delineates the operations conditions and limitations (physical and regulatory) that are applicable for each alternative

to make it easier to understand what changes from one alternative to the next. (DFG, Stockton, USDOI)

Reply: The description of the JPOD Alternatives has been revised.

In general, the JPOD alternatives are designed to build on each other, with subsequent alternatives incorporating features of the previous alternatives, but allowing increasing exports. The exceptions are JPOD alternatives 4, 6, and 9. JPOD Alternative 4 builds on JPOD 3, but the remaining JPOD alternatives do not build on it. JPOD 4 assumes that existing wheeling by the SWP to certain CVP contractors specified in JPOD 3 is authorized and that additional use of the JPOD to benefit fish is authorized. JPOD alternatives 6 and 9 assume different pulse flows than the other JPOD alternatives (Letter of Intent and SJRA pulse flows, respectively).

The JPOD alternatives are properly considered independent of the flow alternatives, because any of the JPOD alternatives could be imposed in combination with any of the flow alternatives. If a flow alternative other than alternative 2 is selected, impacts to the SWP/CVP would be reduced as compared to the impacts described in Chapter 13, and impacts to other water users would be similar to those impacts described in Chapters 5 and 6 for the selected flow alternative.

Section C.1. Joint POD Alternative 1 (No Project)

Comment: [page 05] The DEIR's no-action alternative for the JPOD does not include any analysis of the actions that DOI will take pursuant to CVPIA Section 3406(b)(2), as reflected in Interior's November 20 Announcement. These actions will have potential impacts and benefits to anadromous fish that contribute toward meeting the Board's narrative salmon objective, which should be considered. (USDOI)

Reply: As described in Chapter IV, the base case for the DWRSIM modeling included CVPIA flow release criteria for the Sacramento River, Clear Creek, and the American River. At this time, the SWRCB is unable to determine how other CVPIA Section 3406(b)(2) actions will be implemented.

Section C.4. Joint POD Alternative 4

Comment: [page 05] Application of JPOD Alternative 4 is not as clear as it might have been prior to the November 20, 1997 DOI Administrative Proposal for Management of 3406(b)(2) water (800,000 acre feet). The DOI decision has essentially abandoned any attempt to account for management of the 800,000 AF of CVP yield for fish and wildlife purposes. Upstream and Delta actions will be undertaken (not modeled by SWRCB) and, independent of those actions according to the DOI, all efforts will be made to augment CVP supplies using the so-called "tool box" measures. The DFG's view is that this DOI approach to implementing the CVPIA will result in the CVP seeking to make greater use of the SWP export capacity. The DWR and the USBR have collaborated on modeling SWP/CVP operations that include the AFRP Delta actions. This type of modeling should be included in the FEIR to disclose the effects of AFRP Delta actions and joint points together. (DFG)

Reply: Comment noted. The November 20, 1997 DOI Administrative Proposal for Management of 3406(b)(2) Water has been the subject of litigation, and will be replaced by a new decision on implementation of section 3406(b)(2).

Section C.5. Joint POD Alternative 5

Comment: [page 05] JPOD Alternative 5 authorizes joint points with no restriction on the purpose of use. Since Alternative 4 includes the joint points uses in Alternative 3, and Alternative 5 includes all joint points uses in Alternative 4, the FEIR should explain why Alternative 5 is described as building on Alternative 3 and not 4. The FEIR should also explain if all of the limits contained in USCOE Public Notice 5820-A apply to JPOD Alternatives 3 and 4. (DFG)

Reply: The use of the joint point of diversion under JPOD Alternative 4 includes the uses identified in Alternative 3 plus additional use to provide a net benefit to fish and wildlife. For modeling purposes, the assumption is made that exports will be curtailed beyond the level required in the Bay/Delta Plan in April and May. These export curtailments are then made up later in the year. JPOD Alternative 5 does not include this export restriction in the modeling (nor do any other alternatives). JPOD Alternative 5 builds on JPOD Alternative 3 by by simply removing the restriction on the purpose of use of the JPOD.

The limits contained in Public Notice 5820-A apply to the base case and all other JPOD alternatives except JPOD Alternatives 7 and 8 which assume diversions up to the permitted diversion rates of the projects. The description of the alternatives has been revised to make this clear.

Section D.1. WATER SUPPLY IMPACTS, SWP and CVP Delivery Impacts

Comment: [page 07] It does not seem that comparison of JPOD Alternative 1 to all the others is relevant. Including those comparisons unnecessarily complicates an already complex analysis. (DFG)

Reply: Comparisons were made with Joint POD Alternative 1, which represents the base case or no project condition, to maintain consistency with the analyses presented in previous chapters. Additional comparisons were made, where possible, with Joint POD Alternative 2, to analyze any incremental effects of other alternatives that allow wheeling.

Comment: [page 07] We believe implementation of a Joint Point of Diversion has the potential to improve the water quality of supplies delivered to Southern California. Such an effect may help ensure the continued viability of ongoing water management practices, (i.e., water recycling and groundwater recovery). The FEIR needs to document the potential benefits or impacts to water quality, water supply, local resources management, and the local economy that would be experienced in export areas. (MWD)

Reply: Comment noted. As an SWP contractor, MWD is unlikely to receive any water supply benefit as a result of implementation of the JPOD. However, the increased ability to fill San Luis Reservoir during high flow events through use of JPOD could have some water quality benefits for MWD.

Comment: [page 07] The DEIR implies the four entities listed in joint points Alternative 3 are the only existing CVP contractors. If CVP deliveries are increased by up to 247 TAF, the final EIR should disclose to whom this water is delivered if not to existing CVP contractors. (DFG)

Reply: The text of revised Chapter XIII was changed to clarify the confusing text mentioned in the comment. Presently, in addition to delivering water to other contractors using its pumping facility at

Tracy, the CVP uses the SWP's pumping facility in the Delta to deliver water to the Cross Valley Canal service area, Musco Olive, Tracy Golf Course, and the Veterans' Administration Cemetery even though the use of the SWP's pumps for this purpose is not authorized. The purpose of JPOD Alternative 3 is to analyze the environmental effects of authorizing this existing practice. Any additional water pumped in subsequent alternatives would be delivered to other existing CVP contractors.

Comment: [page 07R] The DEIR is inconsistent in its description of SWP use of CVP pumping facilities. If the "SWP never uses the CVP pumping facilities", it would not "occasionally use the CVP facilities if necessary for fish protection." (WWD-2)

Reply: The DEIR is not inconsistent in this description. The text states "As modeled, . . . the SWP never uses the CVP pumping facilities." In contrast, the text points out that "in real operation, the SWP may occasionally use the CVP facilities if necessary for fish protection, but such an operation is likely to be rare." The difference in these statements points out that the modeling assumptions did not include SWP use of CVP pumping facilities, but that such an occurrence is possible.

Section D.2. SWP Wheeling for the CVP

Comment: [page 08] If CVP deliveries increase by 247 TAF and SWP wheeling for the CVP is 347 TAF, the FEIR should clearly explain whether "altered operation of the CVP" means that CVP exports decrease by 100 TAF. (DFG)

Reply: The example referred to is a comparison of Alternative 8 to Alternative 2 using data in Table XIII-1 and XIII-2. Under Alternative 8, CVP deliveries are 247 TAF greater than under Alternative 2, with 347 TAF wheeled at the State's Banks Pumping Plant. These data indicate that, by using the joint point of diversion to wheel water early in the water year, the CVP is able to reduce its pumping by 100 TAF later in the year. Thus, total deliveries increase by 247 TAF even though 347 TAF are wheeled.

Comment: [page 08] The FEIR should clarify if the changes in carryover storage imply a change in the risk analysis and rule curves the SWP and CVP will use to make project management decisions. All joint points alternatives have adverse effects on carryover storage except for New Melones Reservoir in JPOD Alternative 6 which does not meet the 1995 Bay/Delta Plan objective for flow at Vernalis. (DFG)

Reply: The modeling for the JPOD alternatives did not assume a change in the rule curves for SWP and CVP operations. Implementation of the Bay/Delta Plan increases demands on project reservoirs, which results in decreased carryover storage and decreased deliveries. In actual operations, there are many factors considered by reservoir operators when operation decisions are made. Although the risk analysis are rule curves used by the SWP and the CVP may change, to predict how would be speculative.

Comment: [page 08] 2nd paragraph. There are potential benefits to fisheries possible from combined points of diversion, because pumping could be shifted from one plant to the other. (DWR)

Reply: A discussion of the benefit associated with flexibility to shift export locations between the SWP and CVP has been added to Chapter XIII, Section E.3 of the FEIR.

Section D.3. Carryover Storage in SWP and CVP Reservoirs

Comment: [page 09R] The discussion on page XIII-9 of the DEIR identifies the Joint POD alternatives' impacts on carryover storage in CVP and SWP reservoirs, including Folsom Reservoir, but provides no discussion of whether or how the predicted changes are significant. (Sac-2)

Reply: Carryover storage alone is not an environmental impact of the project, thus, significance levels for changes in carryover storage were not established. Carryover storage, along with other water supply impacts, were evaluated for their effect on the environment in the Delta and upstream areas.

Section E.1. ENVIRONMENTAL EFFECTS OF IMPLEMENTING JOINT POD ALTERNATIVES IN THE DELTA, Hydrology

Comment: [page 14] The text states that "The net Delta outflow pattern is the opposite of the export pattern. Generally, net Delta outflow decreases from July through January and increases in February and March." The concept is right but it is not obvious from Tables XIII 10 through 13. Conceptually, NDOI should increase over Alternative 1 for February through June except in critical periods when the system may run short of water to meet needs. (DWR)

Reply: The comment that NDOI should increase in the JPOD alternatives in comparison to Alternative 1 is true. The comment cited from the text, however, compares JPOD alternatives 3 - 9 with JPOD Alternative 2 and it accurately reflects information from the cited tables.

Comment: [page 14] The DEIR does not provide data on the potential changes in export to inflow (E/I) ratio caused by JPOD. Providing Delta E/I ratios for all months for each of the flow and JPOD alternatives would assist in the comparisons. (USDOI)

Reply: Tables have been included in the hydrology sections for Chapters 6 and 13 of the FEIR showing how the Flow Alternatives and the Joint Point Alternatives influence the E/I ratio.

Comment: [page 15] Tables XIII-6 to 13: Alternative 1 in the 73-year period is the same as the critical period. This is not possible. The DEIR also should clarify in the text what the negative values mean. (USDOI)

Reply: The monthly flow values for Alternative 1 in the critical period were posted incorrectly for these tables. However, the change in flow between Alternative 1 and the other alternatives was calculated using the correct values. Tables XIII-6 through XIII-13 have been revised. Text has been added to explain that reductions in flow are expressed as negative values.

Comment: [page 15-17R] Tables XIII-6 through XIII-11, which appear on pages XIII-15 through XIII-17 of the May 1998 supplement, do not contain any entries for Joint Point of Diversion Alternative 9. These tables should be revised to include such entries. (BVID-2)

Reply: Alternative 9 entries were omitted from these tables by mistake. These tables have been revised for the FEIR to include entries for Alternative 9.

Comment: [page 15R] The decision to label the eight flow alternatives as 1 through 8 and the nine Joint Point of Diversion alternatives 1 through 9 leads to unnecessary confusion in Chapter XIII. This confusion, e.g., may have contributed to errors in Tables XIII-6 through XIII-11 which only show results for alternatives 1 through 8 whereas Tables XIII-12 and XIII-10 on page XIII-18 show results for alternatives 1 through 9. (CCWD-2)

Reply: Alternative 9 entries were omitted from Tables XIII-6 through XIII-11 by mistake, but not because of the labeling of the alternatives. These tables have been revised to include entries for Alternative 9. Efforts have been made to distinguish flow alternatives from joint POD alternatives where there is potential for confusion.

Section E.2.a. Salinity, X2

Comment: [page 19] Page XIII-19 of the DEIR states that minor differences in X2 for the alternatives are expected because NDOI varies little among them. Tables XIII-10 & 11 indicate a significant difference in the February to mid-June period when X2 is a concern. For the 73 year period, NDOI changes vary as follows: Feb 962 cfs, Mar 597 cfs, Apr 1109 cfs, May 810 cfs, June 577 cfs. These seem like significant variations of NDOI among the alternatives. (DWR)

Reply: The Net Delta Outflow Index does not vary significantly among the JPOD alternatives on a percentage basis. For example, the maximum percentage change in the Net Delta Outflow Index over the average 73 year hydrology between JPOD Alternative 2 (1995 Bay/Delta Plan objectives with no joint use of points of diversion) and the other JPOD alternatives is: February (1.6%), March (1.1%), April (4.0%), May (3.4%), and June (2.8%).

Comment: [page 19] The sign convention adopted for X2 (i.e. positive changes equate to westward movement of X2) makes it difficult to follow this analysis. Since this parameter is defined as a distance from the Golden Gate, X2 becomes a larger number as the location of the 2 parts per thousand near-bottom salinity moves upstream. Thus, it seems more logical to maintain consistency with the X2 definition and adopt the convention whereby positive changes (increases) in X2 indicate an eastward movement of the salinity condition. A table for X2 with the same format as Tables XIII-6 through XIII-13 would be useful. (DFG)

Reply: Either convention (+/-) can be confusing. Chapter VI of the FEIR has been revised to include a Bay/Delta map which has markers at five-kilometer increments along a curved line from the Golden Gate bridge to the confluence of the Sacramento and San Joaquin Rivers. The map should help readers visualize X2 location and the direction and magnitude of change in X2 position. Table XIII-14 has been revised to show change in X2 from Alternative 2 as was done in Tables XIII-6 through XIII-13.

Comment: [page 19] The DEIR should clarify what the negative values mean in Table XIII-14. (USDOI)

Reply: The text explains that negative values indicate a shift toward the Delta; that is, X2 moves eastward and farther from the Golden Gate Bridge as compared to Alternative 1.

Section E.2.b. EC Within the Delta

Comment: [page 20] Last Paragraph on Carriage Water. The DEIR states that "In summary, the DWRDSM output indicates a need for carriage water, " CCWD submits that the DWRDSM results only indicate that the salinity-outflow relationship in DWRSIM (CCWD's salinity-outflow model, often referred to as the G-Model) and DWRDSM give different results at low outflows, in particular when there is reverse flow in the western Delta.

A comparison of DWRDSM simulations with historical data is given in the CALFED document "Recalibration of the Delta Simulation Model I (Suisun Marsh Version) - Final Report" dated September 4, 1997. With regard to the DSM-1 calibration, the District notes that the DSM-1 model was recalibrated for a very short period, October 1991 through September 1994. A longer period should always be used to avoid unnecessary bias in the model, especially because of uncertainties in the estimates of Delta outflow. It is also not sufficient to just reproduce the calibration period. Comparisons of predicted and historical data are also needed for periods other than the calibration period to validate the DSM-1 model. While the DSM-1 model recalibration for Suisun Bay (Mallard Island and Collinsville in particular) is relatively good, the DSM-1 recalibration for Jersey Point shows predicted TDS values that are 1.5 to 2 times the observed field data (Figure 20 from the CALFED document is shown in Appendix F of this comment letter). The CALFED document also presents a calibration comparison for Holland Tract, which is close to and highly correlated with Rock Slough salinities. As can be seen from Figure 21 in the CALFED document (reproduced in Appendix F), the salinity at Holland Tract has been calibrated too high by a factor of about 2 during the one significant seawater intrusion event. Because the previous calibration and recalibration of the DSM-1 model are much too high at these stations, it is not surprising that both the SWRCB and CALFED alternative runs using DSM-1 are predicting higher Rock Slough salinities than expected, and showing violations of the Rock Slough M&I standard.

CCWD continues to believe that the salinity-outflow model in DWRSIM adequately estimates the outflow needed to meet salinity objectives in the 1995 Plan. As discussed above, an alternative explanation of the discrepancies between DWRSIM and DWRDSM is that the DSM-1 model overestimates the effect of reverse flows on interior Delta salinities. (CCWD)

Reply: Comment noted.

Comment: [page 20] The impacts on export water quality should be analyzed. Additionally, the impacts on water levels in the Delta channels in the vicinity of the intakes should be considered. (CDWA)

Reply: Graphs and text have been added which show salinity at the Banks and Tracy Pumping Plants under Flow Alternatives and Joint Points of Diversion Alternatives, and minimum water level elevations at southern delta locations under JPOD alternatives.

Comment: [page 21] The EIR should analyze the effects of Joint Point alternatives on salinity at Contra Costa Water District's water intakes and propose mitigation measures consistent with SWRCB Resolution No. 68-16. (CCWD)

Reply: It is not possible to quantify absolutely changes in salinity in the Delta as a result of implementing Joint Points of Diversion. However, using DWRSIM and DWRDSM, the SWRCB has assessed the relative effects of implementing Joint Points of Diversion alternatives. Figures XIII-12 through XIII-16 compare the effects of the Joint Point alternatives on salinity at Contra Costa's intakes. An analysis of these alternatives is in section E.2.b. The SWRCB has no information to suggest that CCWD will be significantly affected in its ability to meet its chloride concentration goal for delivered water. Therefore no mitigation measures are necessary.

Comment: [page 24R, 25R] SWRCB Resolution No. 68-16 requires water quality that is higher than defined water quality objectives to be maintained until it is demonstrated that a change will (1) be consistent with the maximum benefit to the people of the state; (2) not unreasonably affect present and anticipated beneficial uses of water; and (3) not result in water quality less than that prescribed in water quality control plans or policies. It appears that JPOD alternative 8 results in significant increases in salinity relative to other JPOD alternatives during some months of some year types even though the objective is not exceeded. The EIR should quantify and analyze these and other JPOD impacts and should require mitigation for impacts which affect CCWDs ability to fill Los Vaqueros reservoir with high quality water suitable for blending to meet CCWD's 65 mg/l chloride concentration goal for delivered water. (CCWD-2)

Reply: Implementation of JPOD Alternative 8 would not cause a significant impact to water quality at CCWD's intake. The water quality objectives established to protect CCWD's water supply will be met under all JPOD alternatives. While DWRDSM modeling shows increased chloride levels in certain months from Alternative 8, it also shows decreased chloride in other months. Furthermore, implementation of JPOD alternatives, including Alternative 8, results in lower overall average chloride levels in below normal, dry, and critical year types compared to the base case.

Comment: [page 28] SDWA questions the data contained in the other figures analyzing the effects on water quality at Vernalis under the various alternatives. The data given shows few and slight violations at the Vernalis Water Quality Standard under the various alternatives. Since the historical data shows numerous and substantial violations of the water quality standard, it is unclear why those effects do not appear when the alternatives for the Joint Point of Diversion are analyzed. (SDWA)

Reply: As described in section C of Chapter XIII, the DWRSIM model run used as the base case from upon which JPOD operations were added imposed full compliance with all objectives at salinity stations controlled by the model (with the exception of one month in 1992). Vernalis salinity is controlled by the model, and compliance at this location is expected. The exceptions to this observation are JPOD alternatives 1,6, and 9, which used different base studies.

Comment: [page 32] It is not clear whether or not the impacts of the increased amount of salts delivered with the increased CVP deliveries to the west side of the San Joaquin Valley is accounted for in the models. (CDWA)

Reply: The use of joint points of diversion will not increase salt load discharges to the San Joaquin River in comparison to JPOD Alternative 1. In comparison to JPOD Alternative 2, salt loads will increase. This increase is reflected in the model studies by increased return flows from the west side of the San Joaquin Valley. The increased flows, however, result in a decreased modeled salt concentration in the San Joaquin River at Maze Road because the salt concentration at this location is modeled using a salinity/flow relationship. In any event, the change in salt levels due to the use of the

joint points of diversion are expected to be insignificant because the change in return flows is very small.

Section E.3. Fish and Aquatic Resources

Comment: [page 33] The DEIR does not specifically attempt to evaluate the impact of JPOD alternatives on other key anadromous species such as steelhead, green and white sturgeon and American shad. (USDOI)

Reply: In the Delta, the effects of changes in flow and diversions were analyzed for all species for which quantitative relationships with those factors were available.

In upstream areas, the ecosystem effects of changes in flow were analyzed using the Range of Variability Approach.

Comment: [page 33] Entrainment impacts are described as the most significant impact on aquatic resources in the Delta due to joint points implementation. The DFG believes it is likely that export-related impacts other than entrainment losses may be as or even more significant than direct entrainment losses.

The last paragraph acknowledges increased exports from July to January due to joint points. The statement that winter-run salmon may respond positively because smolts would complete their out migration by the time exports increased in the summer is partially incorrect because it does not account for the potential effects on winter-run salmon of increased exports in the November-January period. (DFG)

Reply: Revisions made to text. First sentence has been revised to read "Of the factors identified above, entrainment losses and other export-related effects are thought to have the most significant potential impacts on aquatic resources in the Delta from implementation of the Joint POD alternatives." Revision made to text regarding impacts to winter-run chinook salmon.

Comment: [page 33] The revised DEIR should also include a table to reflect when fish (by key species) entrainment occurs over the year to enable comparisons of JPOD use to fish presence. (USDOI)

Reply: Table III-7 lists the timing of chinook salmon adults and juveniles in the Delta. The impacts of the Joint POD alternatives on each chinook salmon race and other key Delta species are described in Chapter XIII.

Comment: [page 33] Several of the joint point alternatives will result in degraded conditions for aquatic resources. For instance, diversions for export will increase by up to 122 TAF, 170 TAF, and 259 TAF for JPOD Alternatives 5, 7 and 8 respectively when compared to Alternative 2. These represent increases of 2.2, 3.0, and 4.6 percent respectively and a diminishment of the fisheries protection originally provided by the 1995 Bay/Delta Plan. Alternatives 3, 4, and 6 increase exports by between 72 and 82 TAF or 1.5 percent compared to Alternative 2. (DFG)

Reply: The FEIR acknowledges on page XIII-39 that there are increases in exports in some months for the alternatives and that some of the benefits of implementing 1995 Bay/Delta Plan are offset by the adverse effects of implementing the Joint POD alternatives.

Comment: [page 33] In general, Joint Point Alternatives 5, 7 and 8 result in significant adverse impacts to aquatic resources when compared to Alternative 2. With respect to changes in survival for fall-run, late fall-run, and winter-run salmon, Alternative 4 increased or preserved to the greatest extent the fishery improvements provided by the 1995 Bay/Delta Plan. Alternatives 7 and 8 actually reduced survival for fall-run and late-fall run salmon. (DFG)

Reply: Results of the USFWS salmon smolt survival model for the JPOD alternatives indicate that survival indices for Alternatives 2 - 9 are generally very similar, and higher than in Alternative 1, for all chinook salmon runs.

Comment: [page 33] The Joint Points of Diversion analysis does not consider impacts to San Joaquin River salmon. The analysis shows a mixture of flow impacts in terms of shifting the regime of export pumping. Under the operational premise of refilling the federal share of San Luis earlier, increased pumping will occur in the fall, with mixed increases and decreases in export pumping in subsequent months. A question exists as to whether or not the evaluated operation is the only potential operation plausible if the Joint Points of Diversion petition is granted. If not, then a range of plausible operations must be evaluated and disclosed. Further, the environmental consequences upon San Joaquin River salmon of any depicted operation should be evaluated and disclosed, including the impact of increased fall exports on fall migration of salmon. For all of these reasons, the DEIR has not adequately assessed the impacts associated with the joint points of diversion requested by the Projects. Without an analysis of alternatives and/or mitigation measures, this analysis fails to provide the detailed and informative environmental analysis required by CEQA. (SFPUC)

Reply: There are many potential JPOD operations. The modeling assumes that, once JPOD regulatory constraints are established, the projects will operate to maximize their deliveries within the physical and other regulatory constraints of the system. This assumption is the most reasonable possible. In Chapter XIII of the FEIR, the impacts of the Joint POD alternatives on the through-Delta survival of San Joaquin River chinook salmon smolts are modeled, with and without the Head of Old River barrier. In upstream areas, the impacts of the Joint POD alternatives on water temperature and aquatic habitat in the major tributary streams are modeled.

Comment: [page 33] Joint Point of Diversion Alternatives 5, 7 and 8 would significantly increase the ability of both the CVP and the SWP to export water from the Delta. These alternatives include not only the use of the SWP pumps by the CVP (and vice versa), but they also would allow unfettered use of 3,500 CFS of additional installed export capacity (i.e., a combined total of up 14,900 CFS or 10.8 MAF/year) whose use is currently distinctly limited. While the impact to ecosystem resources as a result of increased exports would vary according to the protective measures in place, impacts would nonetheless surely occur, especially to the winter- and spring-run salmon that are most at risk during periods when the full physical capacity of the Delta export pumps would most often be used. As pointed out earlier, the ecological impacts of these alternatives are not analyzed adequately in the DEIR. (EDF)

Reply: In the FEIR, the effects of the Joint POD alternatives on survival of Sacramento River fall, late-fall, winter, and spring-run juveniles through the Delta have been modeled, as well as effects on

abundance of striped bass, longfin smelt, Sacramento splittail, starry flounder, and Crangon franciscorum. Results are presented in Chapter XIII. Results of the USFWS salmon smolt survival model for the JPOD alternatives indicate that survival indices for Joint POD Alternatives 2 - 9 are generally very similar, and higher than in Alternative 1, for all chinook salmon runs.

Potential entrainment effects of the JPOD alternatives are discussed in Chapter XIII and appropriate mitigation measures are proposed.

Comment: [page 33] End of last paragraph: The Service does not believe that the timing of emigration of winter and spring-run chinook salmon can be separated to the extent that the DEIR does. This should be revised by qualifying the existing statement. (USDOI)

Reply: Comment noted. The text is revised to clarify winter and spring-run emigration periods.

Comment: [page 34] The salmon smolt survival models are very sensitive to assumptions about the timing of juvenile salmon arrival in the Delta. Therefore, these assumptions should be specified for each race of salmon. Chapter XIII of the DEIR incorrectly describes the migratory behavior patterns of juvenile spring-run salmon leading to an inaccurate assessment of potential adverse and beneficial effects on spring-run salmon. The FEIR should correct this deficiency. (DFG)

Reply: The salmon smolt survival models were run with the best available information on the arrival of each run of juvenile chinook salmon in the Delta. The assumptions regarding the timing of juvenile salmon arrival in the Delta have been included. Information in Chapter XIII on migratory patterns of juvenile spring-run salmon has been revised.

Comment: [page 34] The DEIR should analyze the impacts of the JPOD on winter-run and spring-run chinook salmon. (NHI)

Reply: In the FEIR, the effects of the Joint POD alternatives on survival of Sacramento River fall, late-fall, winter, and spring-run juveniles through the Delta have been modeled, as well as effects on abundance of striped bass, longfin smelt, Sacramento splittail, starry flounder, and Crangon franciscorum. For major streams, the upstream effects of the JPOD alternatives on water temperature and the aquatic ecosystem have also been modeled. Results are presented in Chapter XIII.

Results of the USFWS salmon smolt survival model for the JPOD alternatives indicate that survival indices for Alternatives 2 - 9 are generally very similar, and higher than in Alternative 1, for all chinook salmon runs.

Comment: [page 34] The EIR is deficient because the Joint POD analysis does not consider impacts to San Joaquin River salmon. The EIR fails to analyze or even mention potential impacts to San Joaquin River salmon. (SJRG)

Reply: The effects of the Joint POD alternatives on San Joaquin fall-run chinook salmon are modeled in the FEIR.

Comment: [page 34R] DFG recommends the SWRCB implement JPOD Alternative 4 with the following modifications:

1. Give the wheeling of CVPIA Refuge Water Supply Program level 4 water supplies equal priority with wheeling CVP contract water supplies.
2. Use joint points for continued deliveries to Musco Olive, the Tracy Golf Course, and the San Joaquin Valley Veterans' Administration cemetery.
3. Use joint points for conveyance through the Cross Valley Canal for direct deliveries to CVP contractors served from the Cross Valley Canal.
4. Use joint points during the February through June period only under conditions that avoid any incremental adverse impact to Delta fish or aquatic habitat.
5. Use joint points during the November through January period until such time as salmon are observed approaching the Delta, based on monitoring in the Sacramento River north of the Delta.
6. In November through January, once juvenile salmon have been detected, use joint points only when the Delta Cross Channel Gates are closed and QWEST is and will remain positive (no reverse flows) or if reverse flows do exist, use joint points only when the resulting percent of inflow diverted is less than 50 percent in November, 45 percent in December, and 40 percent in January.
7. Provide for a portion of any water wheeled for non-environmental purposes in the October through January period for environmental uses. Such uses could include exchanging that water for reduced exports during key times specified by the fish and wildlife agencies. (DFG)

Reply: Although on its face, the comment appears to address JPOD Alternative 4, the comment proposes a new alternative that gives equal priority to wheeling water for the CVPIA refuge program and wheeling for CVP contractors. The new alternative also includes regulatory measures to mitigate for entrainment. Items 1, 2, 3, and 7 describe the new alternative which is similar to JPOD Alternative 4 in that it authorizes deliveries of water diverted at Banks Pumping Plant to Musco Olive, the Tracy Golf Course, the San Joaquin Valley Veterans' Administration Cemetery (Item 2), and CVC contractors.

Item 7 of the new alternative requires that a portion of any wheeled water for non-environmental purposes in October through January be reserved for environmental uses. Item 7 appears to propose an environmental water account similar to a measure being evaluated by CALFED; however, the wording of Item 7 is vague and the meaning is not entirely clear. This alternative could result in additional pumping over the amount contemplated by JPOD Alternative 4. The amount of additional pumping that might occur depends on many factors and cannot be quantified at this time. Evaluation of the new alternative is not necessary because the impacts associated with the new alternative would fall within the range of impacts expected as a result of implementing the other JPOD alternatives, depending on the quantity of water wheeled.

Items 4, 5, and 6 are essentially mitigation proposals for the entrainment impacts associated with all of the JPOD alternatives considered in Chapter XIII. In the FEIR, mitigation measures similar to those in the comment are proposed to reduce or avoid entrainment impacts during critical time periods. Proposed measures include switching diversions between SWP and CVP facilities if entrainment is high at one of the facilities, modification of required export/inflow rations, re-operation of the Delta Cross Channel gates, or reduction or termination of the joint point operation.

Comment: [page 38] 2nd paragraph and Figure XIII-50. As discussed in Volume I, Chapter IV, the outflow relationship is less appropriate for Sacramento splittail. The text is appropriate, but the figure should be deleted. (DWR)

Reply: Comment noted. Based on the literature cited and personal communication with Bruce Herbold (USEPA, co-author of the study), we concur that the outflow/abundance relationship is probably more closely related to the amount of flooded vegetation available than to the total outflow volume. However, we believe that, in general, use of the outflow/abundance relationship remains valid.

Comment: [page 38] The overall analysis finds Joint POD Alternatives 2 and 4 to be environmentally superior in that they "are the most beneficial to aquatic resources." Please elaborate on the reasons supporting this correct conclusion in the FEIR.

The figures shown on page XIII-36 are probably important to this conclusion, but should be supplemented with a similar figure for an analysis of spring-run salmon. It would show critical losses of salmon to entrainment under Joint POD Alternatives. As the DEIR says, "For other species, like the spring-run salmon, the increased fall and spring pumping may negatively affect them because this coincides with smolt outmigration." DEIR, pp. XIII-33-34. (RCRC)

Reply: The summary on page XIII-38 draws from the analysis presented throughout this section evaluating the effects of the JPOD alternatives on fish and aquatic resources. Modeling of the effects of the JPOD alternatives on survival of juvenile spring-run chinook migrating through the Delta is included in the FEIR. The adverse impacts of implementing the JPOD alternatives are included in the last sentence of the summary.

Comment: [page 39R] The joint points of diversion should be conditioned such that their use will improve fish protection along with any restoration of the average exports of water based upon the water rights for the CVP and the SWP. (EDCWA-2)

Reply: Increased entrainment is identified as a potential significant impact of the Joint POD alternatives on fishery resources. In the FEIR, mitigation measures are proposed to reduce or avoid entrainment impacts of the joint point of diversion during critical time periods. Proposed measures include switching diversions between SWP and CVP facilities if entrainment is high at one of the facilities, modification of required export/inflow ratios, re-operation of the Delta Cross Channel gates, or reduction or termination of increased exports resulting from joint use of the points of diversion.

Comment: [page 39R] The DEIR's discussion of the environmental effects of implementing JPOD alternatives in the upstream areas fails to provide any discussion of impacts to the South Fork American River upstream of Folsom Reservoir. If no such impacts exist or are anticipated, then the DEIR should so state. (EDCWA-2)

Reply: Implementation of the JPOD alternatives will not affect flows upstream of Folsom Reservoir.

Comment: [page 39R, 84R] Chapter XIII, particularly the analysis of the effects of implementing JPOD alternatives on aquatic resources, is strikingly lacking in scientific evidence. It is very hard to find justification for the conclusion on XIII-39 that JPOD Alternatives are beneficial to most species compared to D-1485, but cost some of the benefit of the 1995 Bay/Delta Plan. Such statements are alarming and undercut the importance of the JPOD Alternatives for the parties impacted by the water supply reductions. This under-emphasis is compounded by the over generalizations mentioned

above, in particular on page XIII-84, the unsubstantiated conclusion that even without JPOD, there will be no water supply impacts in excess of 6% over the no project alternative. (SLDMWA-2)

Reply: The conclusion on page XIII-39 is based on the preceding analyses of the effects of the Joint POD alternatives on chinook salmon, striped bass, delta smelt, longfin smelt, Sacramento splittail, starry flounder, and Crangon franciscorum. The conclusion on page XIII-84 is based on information in the last table in Chapter XIII.

Comment: [page 41] Table XIII - 15: The table of Q west values was a helpful part of the DEIR. Positive and negative flows in the south Delta channels (lower Old and middle Rivers) would also be useful to see for the JPOD alternatives. (USDOI)

Reply: QWEST is used as a surrogate for reverse flow conditions in the southern and central Delta channels. In general, as QWEST flows decrease, reverse flow conditions in the southern Delta become more pronounced.

Section F.1. ENVIRONMENTAL EFFECTS OF IMPLEMENTING JOINT POD ALTERNATIVES IN THE UPSTREAM AREAS, Hydrology

Comment: [page 43] In Tables XIII-16 through XIII-25, the first line of data in all odd numbered tables (monthly averages for Alternative 1 in the critical period) is not correct. (USDOI)

Reply: Tables XIII-16 through XIII-25 have been corrected.

Section F.2.b. Aquatic Resources Habitat, Reservoirs

Comment: [page 50] Table XIII-26 to 31: It would be useful to see how the JPOD alternatives compare for all months, not just April-June, and the negative values should be explained in the text. (USDOI)

Reply: The analysis of impacts to aquatic habitat has been replaced by an evaluation of the effects of the alternatives on the aquatic ecosystem on a year-round basis and the tables referred to have been replaced. However, there were no negative values in the tables comparing the modeled flows of the alternatives to the flows recommended in the AFRP Working Paper.

Section F.4.a. Energy, Hydroelectric Power Availability

Comment: [page 62-64] Over a 73-year period, there will be essentially no difference in hydroelectric generation by SWP or CVP unless the alternatives change the amount of floodwater "spilled". (Only a minor change might be seen due to changes in generation head during some months). There may well be some minor change in net hydroelectric generation available to the California grid due to changed pumping loads of the various alternatives. (DWR)

Reply: DWRSIM modeling results show only minor differences in hydroelectric power generation between the alternatives. A major purpose of the analysis was to show the change in pattern of hydroelectric power generation.

Section F.5. Recreation

Comment: [page 67] The DEIR fails to examine the effects of the JPOD on water levels in the Southern Delta. An increase in export pumping under a JPOD program can decrease the amount of water being trapped by the South Delta barriers, thereby having an impact on riparian diversions and recreation. (SDWA)

Reply: An analysis of the effects of the JPOD on water levels in the Delta has been added. The analysis indicates that any reductions in water levels would be relatively minor. These reductions would not be expected to have an adverse impact on recreation in the Delta.

Section F.6.a. Cultural Resources, Impacts

Comment: [page 76-81R] The DEIR indicates that Alternatives 6 and 8 will significantly reduce the minimal annual reservoir elevation for Folsom Lake. The DEIR, however, lacks any significant discussion regarding whether such a reduction in minimal annual reservoir elevation would impact water supplies and intake facilities in Folsom Reservoir. Also, the DEIR should discuss whether such reductions will impact reservoir releases for fish flows. (EDCWA-2)

Reply: The elevation of the El Dorado Hills pumping plant is 318 feet and the elevation of the centerline of the intake for the San Juan Pipeline/City of Folsom/Folsom Prison is 314 feet. However, the minimum power pool elevation is 327 feet and the reservoir is operated to never drop below that elevation. If forecasts predicted water levels below 327 feet, the USBR likely would take measures to minimize the demand on Folsom Reservoir.

The DWRSIM modeling studies show that minimum reservoir elevations drop below 327 feet for both the base case and all the flow alternatives. The reservoir elevation drops below 327 feet more frequently in all of the alternatives compared to the base case for the months of June through October. Although the modeling indicates an impact, the USBR likely would operate Folsom Lake to prevent impacts to the water supply of the contractors who divert directly from the lake. This could be achieved by shifting releases from Folsom Lake to Shasta Lake.

Section F.6.c. Impact Analysis

Comment: [page 78, 79] Of Joint POD Alternatives 2 through 8, only Alternative 4 and Alternative 5 would be acceptable to the SWP. The indications of additional reservoir drawdown stated herein are accurate and attributable to the JPOD. The CVP is the party receiving benefits from the JPOD and the SWP will not agree to wheeling for the CVP if it directly affects the SWP water supply. Lake Oroville change in minimum storage for the alternatives is restated below:#1=base, #2=-2', #3=-12', #4=+1', #5=+1', #6=-28', #7=-45', #8=-47' (DWR)

Reply: Comment noted.

Section F.7.b. Economic Analysis, Irrigation and M&I Water Impacts

Comment: [page 82R] Over generalization makes the water supply impact of implementing the 1995 Bay/Delta Plan flow objectives appear much more diluted than they in fact will be. For

example, at XIII-82 the text acknowledges that the no-project alternative (POD Alternative 1) provided an average annual diversion of 6.3 million acre feet. The text concludes that Joint Point of Diversion "JPOD" Alternative 2 (No JPOD, full implementation of the 1995 Bay/Delta Plan), as well JPOD Alternatives 3 through 6 and 9 cause less than a 6% reduction in water supply. This sounds quite a low-impact change in water supply. However, that 6% is not an across the board 6% reduction to the 6.3 million acre feet; rather, almost all of the impacts fall on the 1.8 million acre feet delivered to the CVP Ag Service Water Contractors in the SLDM WA service area. Furthermore, those contractors are in many cases water short, with supplies lower than crop requirements. Therefore, the implication of very limited impact is improper, and the real impact to those parties affected by the changes in water deliveries needs to be examined in the FEIR. (SLDMWA-2)

Reply: The economic analysis in Chapter XIII evaluates impacts due to SWP and CVP delivery reductions south of the Delta. For the most part, the CVP delivery reductions would be to the contractors in the San Luis & Delta-Mendota Water Authority Service Area as they comprise the largest group of contractors south of the Delta. This is not clear from the tables and text, and the text will be amended to clarify this point.

The premise of the comment, that almost all of the water supply reductions resulting from the Joint Point of Diversion Alternatives impact the CVP Ag Service Water Contractors in the San Luis and Delta-Mendota Water Service Area, is not correct. An examination of Table XIII-1 shows that for six of the eight Joint Point of Diversion Alternatives, the SWP accrues over half of the delivery reductions. For Alternatives 2 and 9, the CVP accounts for 62 percent and 52 percent of the delivery reductions respectively. The CVP's share of the total reductions under the joint point of diversion alternatives cannot be characterized as "almost all of the impacts." The economic analysis in Chapter XIII does not understate the impacts to the contractors south of the Delta.

The water supply impacts of the flow alternatives to specific CVP service areas are provided in Tables V-1 and V-2. The tables show that the San Luis Unit of the CVP experiences the largest delivery reductions among the CVP service areas. SWP service areas also experience significant delivery reductions. The environmental and economic impacts of these reductions are described in Chapters VI and XII, respectively. The purpose of Chapter XIII, in part, is to show that some of these delivery impacts can be reduced through use of joint points of diversion.

APPENDIX II

Comment: [page 79] Volume 2, Appendix 2 contains tables showing Yuba River flows at Marysville. The tables indicate that, in many years, flows as low as 65 cfs occur in July and August. The YCWA is required to maintain at least 70 cfs at that time (except under certain rare conditions) and operates its reservoirs accordingly . Therefore the DWRSIM analysis used by the SWRCB is invalid. (YCWA-1A)

Reply: Yuba River flows at Marysville are not modeled by DWRSIM per se, and the Yuba River at Marysville flow tables in Volume 2, Appendix 2 are not DWRSIM output. The Yuba River at Marysville flow table comes from HEC-3 and Depletion Study Area (DSA) hydrological analysis, and are identical under all of the alternatives except Alternative 5, the watershed allocation alternative. Under Alternative 5, Yuba River flows at Marysville are never near the 70 cfs minimum.

The HEC-3/DSA modeling was done in 1000 acre-feet/mo. (TAF/mo.) units. For the analysis used in the DEIR, those numbers (integers) were converted to cfs. Values are expected to have one (1) TAF of error due to rounding. Error of one TAF/mo. converts to +/- 17 cfs. The "error" of -5 cfs detected by YCWA is within that range. The modeling used does not misrepresent YCWA operations.