### Memorandum of Agreement

Commitments to adaptive management and collaborative science will be secured through a MOA between DWR, Reclamation, the public water agencies, DFW, NMFS, and USFWS. Details of the collaborative science and adaptive management process, including adaptive management decision-making, an organizational structure for adaptive management decisions, and funding for collaborative science will be developed through the MOA, as needed.

### Scientific Basis for Adaptive Management

Adaptive management is a systematic process to continually improve management policies and practices by learning from our actions (Holling 1978; Walters 1986). It requires well-articulated management objectives to guide decisions about what science to try, and explicit assumptions about expected outcomes to compare against actual outcomes (Williams et al. 2009). Adaptive management uses a process to clearly articulate objectives, identify management alternatives, predict management consequences, recognize key uncertainties in advance, and monitor and evaluate outcomes. This structured and systematic process is what differentiates adaptive management from a trial and error approach (National Research Council 2004a; Williams 2011a). Learning, facilitated through deliberate design and testing, is an integral component of adaptive management (Williams et al. 2009; Allen et al. 2011; Williams 2011a).

Adaptive management is a particularly useful framework in the face of scientific uncertainty. The principles of adaptive management lend themselves to water management and ecological restoration in the Bay-Delta (CALFED Bay-Delta Program 2000; Reed et al. 2007, 2010; Healey 2008; Dahm et al. 2009; National Research Council 2011; Parker et al. 2011, 2012; Delta Stewardship Council 2013). In particular, a National Research Council (2011) panel found that despite the challenges, there often is no better option for implementing water management regimes. The adaptive management program for the proposed project will be designed and implemented with these principals and scientific guidance in mind.

## 4.1.3 Description of Alternative 2D

This section provides description of the components and operation of water conveyance facilities, ESA and CESA compliance process, and environmental commitments that will be implemented under Alternative 2D. Table 4.4-4 below, provides a brief summary comparison of these elements between Alternatives 4A, 2A, and 2D.

### 4.1.3.1 Water Conveyance Facility Construction and Maintenance

Under Alternative 2D, water conveyance facilities would be constructed and maintained similarly to those proposed and analyzed under Alternative 4 (including the modifications described in Section 3, *Conveyance Facility Modifications to Alternative 4,* of this RDEIS/SDEIS); however, this alternative would entail five intakes in the same locations as those under Alternative 2A (as shown in Figure 3-2 of the Draft EIR/EIS), rather than three. Water would primarily be conveyed from the north Delta to the south Delta through pipelines and tunnels. Water would be diverted from the Sacramento River through five fish-screened intakes on the east bank of the Sacramento River between Freeport and Courtland (Intakes 1–5) and would be conveyed to a sedimentation basin before reaching the tunnels. From the intakes, water would flow into an initial single-bore tunnel, which would lead to an intermediate forebay on Glannvale Tract. From the southern end of this forebay, water would

pass through an outlet structure into a dual-bore tunnel where it would flow by gravity to the south Delta. Water would then reach pumping plants northeast of the Clifton Court Forebay, where it would be pumped from the tunnels into the north cell of the expanded Clifton Court Forebay. The forebay would be dredged and redesigned to provide an area that would isolate water flowing from the new north Delta facilities from water diverted from south Delta channels.

**Table 4.1-4. Comparison of Alternatives 4, 2A, and 2D**

| Element of Project Description | Alternative 4 (BDCP) | Alternative 2A | Alternative 2D |
|---|---|---|---|
| ESA Compliance | Section 10 (DWR)/Section 7 (Reclamation) | Section 10 (DWR)/Section 7 (Reclamation) | Section 7 |
| California Endangered Species law Compliance | NCCPA | NCCPA | 2081(b) permit |
| Facilities | Modified Pipeline/Tunnel Alignment: 3 intakes, 9,000 cfs | Pipeline/Tunnel Alignment: 5 intakes, 15,000 cfs | Modified Pipeline/Tunnel Alignment: 5 intakes, 15,000 cfs |
| Operations | Dual Conveyance; Operational Scenarios H1–H4 with Decision Tree (see Chapter 3, Section 3.6.4.2 of the Draft EIR/EIS); evaluated at LLT | Dual Conveyance; Operational Scenario B (see Chapter 3, Section 3.6.4.2 of the Draft EIR/EIS); evaluated at LLT | Dual Conveyance; Operational Scenario B without Fremont Weir modifications; evaluated at ELT |
| Conservation Measures/ Environmental Commitments | Conservation Measures 2–21; includes Yolo Bypass Improvements and 65,000 acres of tidal wetland restoration | Conservation Measures 2–21; includes Yolo Bypass Improvements and 65,000 acres of tidal wetland restoration | Environmental Commitments 3, 4, 6, 7, 8, 9, 10, 11, 12, 15, 16; includes up to 65 acres of tidal wetland restoration |
| CEQA Baseline | Existing Conditions | Existing Conditions | Existing Conditions |
| NEPA Baseline | No Action Alternative at LLT | No Action Alternative at LLT | No Action Alternative at ELT |

A map and a schematic diagram depicting the conveyance facilities associated with the modified pipeline/tunnel alignment are provided in Mapbook Figure M3-4 in the Mapbook Volume and Figure 3-10 in Appendix A of this RDEIR/SDEIS (note, however, that these figures depict three intake locations, rather than five; all five intake locations for Alternative 2D are shown in Figure 3-2 of the Draft EIR/EIS). Each additional intake site would also require associated ancillary facilities and features, including box conduits under a widened and raised levee section, a relocated segment of State Route (SR) 160, sedimentation basins, drying lagoons, an outlet shaft, and an elevated pad hosting an electrical substation, an electrical building, and other storage buildings. During construction it is assumed that a temporary work area would surround each permanent intake site and would include a fuel station and concrete batch plant. Construction of Intake 1 would also require an additional segment of single-bore tunnel (connecting Intakes 1 and 2), as well as an expanded reusable tunnel material (RTM) area to accommodate the material associated with this tunnel. Similarly, an extension of the proposed temporary 69kV power line would be required to connect to Intake 1 during construction.

As proposed for Alternative 4, a new pumping facility would be constructed northeast of the north cell of the expanded Clifton Court Forebay, along with control structures to regulate the relative quantities of water flowing from the north Delta and the south Delta to the Banks and Jones Pumping Plants. Alternative 2D would entail the continued use of the SWP/CVP south Delta export facilities.

All other aspects of water conveyance facility design, construction, and maintenance would be similar to those described for Alternative 4 in the revised text in Chapter 3, Sections 3.4, 3.5.9, and 3.6.1 and Appendix 3C, as provided in Appendix A, *Revisions to the Draft EIR/EIS*, of this RDEIR/SDEIS.

### 4.1.3.2 Water Conveyance Facility Operations

Operational components of the water conveyance facilities under Alternative 2D would be similar, but not identical, to those described under Scenario B in Chapter 3, Section 3.6.4.2 of the Draft EIR/EIS. Operational elements associated with Fremont Weir modifications would not be incorporated as part of this alternative, because Yolo Bypass improvements contemplated for Alternative 2A (under CM2 of the Draft BDCP) would not be implemented as part of Alternative 2D; instead, they would be assumed to occur as part of the No Action Alternative because they are required by the existing BiOps. For a detailed characterization of operational criteria, please refer to Chapter 3, Section 3.6.4.2 of the Draft EIR/EIS.[21]

Implementation of Alternative 2D would include operations of both new and existing water conveyance facilities once the new north Delta facilities are completed and become operational, thereby enabling joint management of north and south Delta diversions. Operations included in this alternative for south Delta export facilities would replace the south Delta operations currently implemented in compliance with the USFWS (2008) and NMFS (2009) BiOps. The north Delta intakes and the head of Old River barrier would be new facilities for the SWP and CVP and would be operated as described in Chapter 3, Section 3.6.4.2 of the Draft EIR/EIS. The design of the HORB is not yet complete, and should design change substantially from what is assumed in this RDEIR/SDEIS, such that there is a potential for new effects, additional CEQA and/or NEPA review would be required. Compliance with all other criteria included in the USFWS (2008) and NMFS (2009) BiOps and State Water Resources Control Board Water Right Decision 1641 (D-1641), including Fall X2, the E:I ratio, and operations of the Delta Cross Channel gates and the Suisun Marsh Salinity Control Gates, will continue as part of the continued operations of the CVP and SWP. As such, when compared to operations under the No Action Alternative, Alternative 2D includes modified or new operations and criteria of only the following elements.

- North Delta intake facilities.
- South Delta export operations.
- Head of Old River barrier operations.
- Rio Vista minimum flow standard in January through August.

[21] Note that these proposed operational criteria would only take effect after the proposed conveyance facilities are operational. Until that time, operations would occur as described in the USFWS 2008 and NMFS 2009 BiOps or as modified by the outcome of ongoing ESA compliance processes pertaining to operation of the existing facilities.

Alternative 2D operations include a preference for south Delta pumping in July through September to provide limited flushing for improving general water quality conditions and reduced residence times.

### Real-Time Operational Decision-Making Process

RTOs are expected to be needed during at least some part of the year at the Head of Old River gate and the north and south Delta diversion facilities. In making operational decisions, the RTO Team will take into account upstream operational constraints such as coldwater pool management, instream flow, and temperature requirements. The extent to which real time adjustments that may be made to each parameter related to these facilities shall be limited by the criteria and/or ranges is set out in Table 4.1-2 of this RDEIR/SDEIS. Any modifications to the parameters subject to real time operational adjustments or to the criteria and/or ranges set out in Table 4.1-2 shall occur only through the adaptive management.

**Head of Old River gate.** Operations for the Head of Old River gate would be managed under RTOs as set forth in Table 4.1-2.

**North Delta diversions.** Operations for North Delta bypass flows will be managed according to the criteria described in Table 4.1-2.

**South Delta diversions.** The south Delta diversions will be managed under RTO to achieve OMR criteria, throughout the year based on fish protection triggers (e.g., salvage density, calendar, species distribution, entrainment risk, turbidity, and flow based triggers). Increased restrictions as well as relaxations of the OMR criteria may occur as a result of observed physical and biological information. Additionally, as described above for the north Delta diversions, RTO would also be managed to distribute pumping activities amongst the five north Delta and two south Delta intake facilities to maximize both survival of covered fish species in the Delta and water supply.

### Timing for Implementation of Operations

Implementation of Alternative 2D would include operations of both new and existing water conveyance facilities as described above, once the new north Delta facilities are completed and become operational, thereby enabling joint management of north and south Delta diversions. Until that time, operations will be governed by existing and applicable requirements and standards included in the NMFS (2009) and USFWS (2008) BiOps and D-1641, and any regulations that supersede those requirements.

## 4.1.3.3 Environmental Commitments

To achieve the applicable regulatory standards under ESA Section 7 and CESA Section 2081(b) while also complying with NEPA and CEQA, a subset of those activities proposed in Alternative 2A would be implemented under Alternative 2D. Specifically, portions of the actions proposed under CM3, CM4, CM6, CM7, CM8, CM9, CM10, CM11, CM12, CM15, and CM16 would be included in Alternative 2D.

As described in Section 4.1.2.3 for Alternative 4A, these repackaged and limited elements of the original BDCP Conservation Measures are instead referred to as “Environmental Commitments” for the purposes of Alternative 2D: Environmental Commitments 3, 4, 6, 7, 8, 9, 10, 11, 12, 15, and 16, as summarized in Table 4.1-5 of this RDEIR/SDEIS. These commitments consist primarily of habitat

restoration, protection, enhancement, and management activities necessary to offset—that is, mitigate for—adverse effects from construction of the proposed water conveyance facilities, along with species-specific resource restoration and protection principles to ensure that implementation of these commitments would achieve the intended mitigation of impacts (for a list of these standards, along with species-specific mitigation needs, see Table 4.1-8 of this RDEIR/SDEIS).[22] Where impact statements or mitigation measures refer to Conservation Measures, these statements have been changed in the analysis for Alternative 2D to refer instead to the parallel Environmental Commitments. Additionally, pertinent elements included as Avoidance and Minimization Measures and the proposed Adaptive Management and Monitoring Program would be implemented as applicable to the activities proposed under Alternative 2D.[23] These, too, would serve a mitigation function under CEQA. All of these components would function as *de facto* CEQA and NEPA mitigation measures for the construction and operations-related impacts of Alternative 2D. Details regarding the implementation of these activities under Alternative 2D are provided below and in Table 4.1-5 of this RDEIR/SDEIS.

The RDEIR/SDEIS describes and analyzes Environmental Commitments 3, 4, 6, 7, 8, 9, 10, 11, 12, 15, and 16 at a level of detail consistent with that applied to these activities under other alternatives in the Draft EIR/EIS. (See CEQA Guidelines, § 15126.4[a][1][D] [EIRs must discuss significant effects of mitigation measures, "but in less detail than the significant effects of the project as proposed"]; see also *California Native Plant Society v. City of Rancho Cordova* (2009) 172 Cal.App.4th 603, 621-625 [lead agency did not violate CEQA by failing to identify the off-site location at which mitigation for impacts to on-site wetlands would be carried out].) Specific locations for implementing many of the activities associated with these commitments have not been identified at this time. Therefore, the analyses consider typical construction, operation, and maintenance activities that would be undertaken for implementation of the habitat restoration and enhancement and stressor reduction efforts. Where appropriate and necessary, implementation of individual projects associated with an environmental commitment would be subject to additional environmental review. (See CEQA Guidelines, §§ 15162–15164; 40 C.F.R. § 1502.9[c].)

Note that many of the actions formerly part of Alternative 2A but not proposed to be implemented under Alternative 2D would continue to be pursued as part of existing but separate projects and programs associated with (1) the 2008 and 2009 USFWS and NMFS BiOps (e.g., Yolo Bypass improvements, 8,000 acres of tidal habitat restoration), (2) California EcoRestore and (3) the 2014 California Water Action Plan. Those actions are separate from, and independent of, Alternative 2D. Therefore, for the purposes of Alternative 2D, these elements (and their associated environmental effects) are considered either as part of the No Action Alternative, as described in Section 4.2, *Impacts of No Action Alternative Early Long-Term*, or as part of the cumulative impact analysis, as described in Section 5, *Revisions to Cumulative Impact Analyses*, of this RDEIR/SDEIS.

[22] While these are distinct from the environmental commitments described in Appendix 3B, *Environmental Commitments*, of the Draft EIR/EIS, both sets of commitments would apply to implementation of Alternative 2D.

[23] Specifically, AMMs 1–7, 10, 12–15, 18, 20–25, 30, and 37 would be carried forward under implementation of this alternative.

**Table 4.1-5. Environmental Commitments under Alternative 2D**

| Environmental Commitment 3: Natural Communities Protection and Restoration | |
|---|---|
| Valley/Foothill Riparian | 122 acres |
| Grassland | 1,089 acres |
| Vernal Pool Complex and Alkali Seasonal Wetland Complex | 150 acres |
| Nontidal Marsh | 187 acres |
| Cultivated Lands | 13,410 acres |
| **Total:** | **Up to 14,958 acres** |
| Environmental Commitment 4: Tidal Natural Communities Restoration | Up to 65 acres |
| Environmental Commitment 6: Channel Margin Enhancement | Up to 5.5 levee miles |
| Environmental Commitment 7: Riparian Natural Community Restoration | Up to 297 acres |
| Environmental Commitment 8: Grassland Natural Community | Up to 1,099 acres |
| Environmental Commitment 9: Vernal Pool and Alkali Seasonal Wetland Complex Restoration | Up to 34 acres |
| Environmental Commitment 10: Nontidal Marsh Restoration | Up to 1,307 acres |
| Environmental Commitment 11: Natural Communities Enhancement and Management | At sites protected or restored under Environmental Commitments 3–10 |
| Environmental Commitment 12: Methylmercury Management | At sites restored under Environmental Commitment 4 |
| Environmental Commitment 15: Localized Reduction of Predatory Fishes | At north Delta intakes and at Clifton Court Forebay |
| Environmental Commitment 16: Nonphysical Fish Barrier | At Georgiana Slough |

## Environmental Commitment 3: Natural Communities Protection and Restoration

This action would consist of the acquisition of lands for protection and restoration of listed species habitat in perpetuity and would be implemented in the same way as described in Conservation Measure 3 in the Draft BDCP but over less area. For the purposes of Alternative 2D, this action would entail protection of approximately 14,958 acres, of natural communities and cultivated land, as shown in Table 4.1-5. This protection and restoration would mitigate for the loss of terrestrial species habitat associated with construction of the water conveyance facilities.

## Environmental Commitment 4: Tidal Natural Communities Restoration

This action would consist of the restoration of tidal natural communities and transitional uplands and would be implemented in the same way as described in Conservation Measure 4 in Appendix D, *Substantive BDCP Revisions*, of this RDEIR/SDEIS, but over less area. For the purposes of analysis of Alternative 2D, this action would entail restoration of approximately 65 acres (including transitional uplands), as shown in Table 4.1-5. This analysis assumes that none of these 65 acres of tidal restoration will be done in the Suisun Marsh area. Tidal habitat restoration would mitigate for the physical loss of aquatic habitat associated with construction of the north Delta intake facilities. The current proposed acreage is a total of 65 acres. However, actual acreage may change based on further discussions with NMFS, USFWS, and DFW pertaining to the actual value of the current habitat and/or the appropriate ratio of mitigation or based on footprint changes. Based on initial

discussions, the maximum ratio applied to tidal wetland mitigation is 3:1, and therefore would not exceed 195 acres for this alternative.

### Environmental Commitment 6: Channel Margin Enhancement

This action would consist of the enhancement of channel margin habitat and would be implemented in the same way as described in Conservation Measure 6 in the Draft BDCP but over less linear distance. For the purposes of Alternative 2D, this action would entail enhancement of approximately 5.5 levee miles, as shown in Table 4.1-5. This would mitigate for the loss of salmonid habitat associated with construction of the north Delta intake facilities.

### Environmental Commitment 7: Riparian Natural Community Restoration

This action would consist of the restoration of riparian natural communities and would be implemented in the same way as described in Conservation Measure 7 in the Draft BDCP but over less area. For the purposes of Alternative 2D, this action would entail restoration of approximately 297 acres, as shown in Table 4.1-5. This would mitigate for the loss of terrestrial species habitat associated with construction of the water conveyance facilities.

### Environmental Commitment 8: Grassland Natural Community

This action would consist of the restoration of grassland habitat and would be implemented in the same way as described in Conservation Measure 8 in the Draft BDCP but over less area. For the purposes of Alternative 2D, this action would entail restoration of approximately 1,099 acres as shown in Table 4.1-5. This would mitigate for the loss of terrestrial species habitat associated with construction of the water conveyance facilities.

### Environmental Commitment 9: Vernal Pool and Alkali Seasonal Wetland Complex Restoration

This action would consist of the restoration of vernal pool and alkali seasonal wetland complex and would be implemented in the same way as described in Conservation Measure 9 in the Draft BDCP but over less area. For the purposes of Alternative 2D, this action would entail restoration of up to 34 total acres of vernal pool complex and/or alkali seasonal wetland complex, as shown in Table 4.1-5. This would mitigate for the loss of species habitat associated with construction of the water conveyance facilities.

### Environmental Commitment 10: Nontidal Marsh Restoration

This action would consist of the restoration of nontidal marsh and would be implemented in the same way as described in Conservation Measure 10 in the Draft BDCP but over less area. For the purposes of Alternative 2D, this action would entail restoration of up to 1,307 acres of nontidal marsh, as shown in Table 4.1-5. This would mitigate for the loss of species habitat associated with construction of the water conveyance facilities.

### Environmental Commitment 11: Natural Communities Enhancement and Management

This action would apply to all protected and restored habitats under Alternative 2D and would be implemented, where applicable, to manage and enhance these lands consistent with the approach

described under Conservation Measure 11 in the Draft BDCP. These actions would support mitigation for the loss of terrestrial species habitat associated with construction of the water conveyance facilities.

## Environmental Commitment 12: Methylmercury Management

This action would minimize conditions that promote production of methylmercury in restored tidal wetland areas and its subsequent introduction to the foodweb, and to listed species in particular. Implementation of this action would be consistent with the revised description of Conservation Measure 12 (see Appendix D, *Substantive BDCP Revisions*, of this RDEIR/SDEIS). The portions of the measure applicable to effects in the Yolo Bypass would not apply because Yolo Bypass improvements would not be implemented as part of this alternative.

## Environmental Commitment 15: Localized Reduction of Predatory Fishes (Predator Control)

This action would reduce populations of predatory fishes at locations of high predation risk (i.e., predation hotspots) associated with construction and operation of the proposed water conveyance facilities. Implementation of this action would be consistent with the revised description of Conservation Measure 15 (see Appendix D, *Substantive BDCP Revisions*, of this RDEIR/SDEIS); however, for the purposes of Alternative 2D, this action would be applied only to the reach of the Sacramento River adjacent to the north Delta intakes and to Clifton Court Forebay. This commitment would mitigate for effects on salmonid predation associated with operation of new conveyance facilities. There is also a potential for incidental benefits to other listed species as a result of this commitment.

## Environmental Commitment 16: Nonphysical Fish Barrier

This action would be implemented to address effects related to survival of outmigrating juvenile salmonids by installing a nonphysical barrier at Georgiana Slough to redirect fish away from channels and river reaches in which survival is lower than in alternate routes. Implementation of this action would be consistent with the revised description of Conservation Measure 16 (see Appendix D, *Substantive BDCP Revisions*, of this RDEIR/SDEIS); however, for the purposes of Alternative 2D, this action would be applied only to Georgiana Slough. This commitment would mitigate for effects on salmonid survival associated with operation of north Delta intakes and associated flows.

## Avoidance and Minimization Measures

AMMs 1–7, 10–15, 18, 20–25, 27, 30, and 37-39 would apply to all construction activities under Alternative 2D and would be implemented, where applicable, to avoid and minimize impacts on listed species, consistent with the approach described in Appendix 3.C, *Avoidance and Minimization Measures*, of the Draft BDCP, and in Appendix D of this RDEIR/SDEIS. These actions would minimize the risk of impacts on species resulting from construction activities.

## Collaborative Science and Adaptive Management Program

Considerable scientific uncertainty exists regarding the Delta ecosystem, including the effects of CVP and SWP operations and the related operational criteria. To address this uncertainty, DWR, Reclamation, DFW, USFWS, NMFS, and the public water agencies will establish a robust program of

collaborative science, monitoring, and adaptive management. For the purposes of analysis, it is assumed that the Collaborative Science and Adaptive Management Program (AMMP) developed for Alternative 2D would not, by itself, create nor contribute to any new significant environmental effects; instead, the AMMP would influence the operation and management of facilities and protected or restored habitat associated with Alternative 2D.

Collaborative science and adaptive management will support the proposed project by helping to address scientific uncertainty where it exists, and as it relates to the benefits and impacts of the construction and operations of the new water conveyance facility and existing CVP and SWP facilities. Specifically, collaborative science and adaptive management will, as appropriate, develop and use new information and insight gained during the course of project construction and operation to inform and improve:

- the design of fish facilities including the intake fish screens;
- the operation of the water conveyance facilities under the Section 7 biological opinion and 2081b permit; and
- habitat restoration and other mitigation measures conducted under the biological opinions and 2081b permits.

In summary, the broad purposes of the program will be to: 1) undertake collaborative science, 2) guide the development and implementation of scientific investigations and monitoring for both permit compliance and adaptive management, and 3) apply new information and insights to management decisions and actions. For additional information on how the AMMP would be implemented, see Section 4.1.2.4 in this RDEIR/SDEIS.

## 4.1.4 Description of Alternative 5A

This section provides description of the components and operation of water conveyance facilities, ESA and CESA compliance process, and environmental commitments that will be implemented under Alternative 5A. Table 4.4-6 below, provides a brief summary comparison of these elements between Alternatives 4, 5, and 5A.

### 4.1.4.1 Water Conveyance Facility Construction and Maintenance

Under Alternative 5A, water conveyance facilities would be constructed and maintained similarly to those proposed and analyzed under Alternative 4 (including the modifications described in Section 3, *Alternative 4: Conveyance Facility Modifications,* of this RDEIR/SDEIS); however, this alternative would entail one intake (Intake 2), rather than three. Water would be conveyed from the north Delta to the south Delta through pipelines and tunnels. Water would be diverted from the Sacramento River through one fish-screened intake on the east bank of the Sacramento River near Clarksburg (Intake 2). Water would travel from the intake to a sedimentation basin before reaching the tunnel. From the intake water would flow into an initial single-bore tunnel, which would lead to an intermediate forebay on Glannvale Tract. From the southern end of this forebay, water would pass through an outlet structure into a dual-bore tunnel where it would flow by gravity to the south Delta. Water would then reach pumping plants northeast of the Clifton Court Forebay, where it would be pumped from the tunnels into the north cell of the expanded Clifton Court Forebay. The forebay would be dredged and redesigned to provide an area that would isolate water flowing from the new north Delta facilities from water diverted from south Delta channels.