PROGRAMS RELATED TO IMPROVING AND PROTECTING THE BAY-DELTA SYSTEM

CALFED Bay-Delta Program
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INTRODUCTION

As the CALFED Bay-Delta Program progresses toward developing long-term solutions to problems of the Bay-Delta system related to Water Supply, Water Quality, System Vulnerability, and Ecosystem Quality, it will be necessary to recognize and understand the linkages with existing efforts and programs.

Current programs and efforts span all four of the main areas identified by the CALFED Bay-Delta Program. However, the severity of ecological problems and the intense interest in restoring various attributes of the Estuary's ecosystem has resulted in many more programs associated with Ecosystem Quality. Some programs, depending on implementation specifics, address more than one program area. Many of the programs listed that address Ecosystem Quality are non-agency efforts with extensive involvement by private landowners, interested citizens, and non-profit organizations.

Understanding these various efforts and programs serves a threefold purpose. First, the CALFED Bay-Delta Program and the BDAC can focus on actions to avoid duplication; second, as this list of programs and actions is reviewed, opportunities can be identified where programs can be consolidated, better coordinated or perhaps redirected; and third, legitimate actions can be identified to be included as part of the CALFED Bay-Delta Program where, for instance, a lack of adequate funding may currently hampering progress.

Many of the programs described are being undertaken by agencies that are also members of CALFED and their participation in the CALFED Bay-Delta Program will result in coordination of these activities. The significant work underway to restore and protect San Francisco Bay, for instance, does not need to be duplicated by the CALFED Bay-Delta Program, however, the Program may evaluate actions that would be integrated with that work to synergistically improve the Estuary.

This list is not static and represents an initial effort at identifying associated programs and activities. As drafts of this list are circulated, undoubtedly other activities will be identified which can be added. In addition, the program descriptions are not comprehensive; by necessity they were kept brief. If the reader desires more detailed information, contact names and telephone numbers are provided. Furthermore, any new programs or initiatives that are undertaken during the deliberations of the Bay-Delta Program will be noted and included in future updated lists.

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ONGOING PROGRAMS RELATED TO IMPROVING AND PROTECTING THE BAY-DELTA ESTUARY AND ITS WATERSHED

EcosystemQuality

California-Oregon Transmission Project (COTP) Waterfowl Mitigation Plan: Impacts to waterfowl associated with the construction of the COTP through the Delta were offset with acquisitions and management of approximately 1,200 acres on the eastern half of Palm Tract by the Transmission Agency of Northern California. A habitat management plan developed in consultation with USFWS and DFG staff is currently being implemented. The goal of the plan is to offset bird mortality by enhancing nesting on Palm Tract and offsetting habitat losses due to waterfowl avoiding habitat near the new lines by optimizing wintering habitat. {Frank Wernette -- DFG, 209-948-7800}

California Waterfowl Association (CWA): Founded in 1945 by a group of concerned duck hunters to look after California's waterfowl, wetlands, and outdoor heritage. CWA's species specific Waterfowl Programs seek healthy and abundant waterfowl populations and the resulting recreational values they provide. Focusing on waterfowl species that breed in California, these programs identify essential habitat requirements that are limiting population growth. CWA staff communicate habitat improvement methods to landowners and managers, evaluate habitat projects, and administer incentive programs. In addition, special programs range from providing nest structures for ducks and geese, to financial support for regional wetland enhancement projects. {Richard Shinn -- CWA, 916-648-1406}

California Wetland Riparian Geographic Information System Project: The goal of this project is to develop a Wetland and Riparian GIS database for the Sacramento and northern San Joaquin valleys and the Bay-Delta. Initial categories will be agriculture, wetlands, and uplands. {Scott Flint -- DFG, 916-445-5758}

Category III Program: The Category III program was initiated by the water user community pursuant to the Bay-Delta Principles of Agreement signed in December of 1994. The Category III effort was meant to address non-flow factors that affect the health of the Bay-Delta ecosystem. Funding for Category III programs, such as placement of fish screens, is to be as much as $60 million a year for three years. {Walt Wadlow -- SCVWD, 409-265-2600}

Central Valley Habitat Joint Venture: The goal of this plan is to protect, maintain, and restore habitat to increase waterfowl populations in the Central Valley and the Delta, specifically through the coordination of habitat acquisition and management. The joint venture will coordinate habitat acquisition within agencies to maximize habitat benefits for wildlife. Plans specifically for the Delta include: protecting 3,000 acres of wetland habitat; restoring and protect 19,500 acres of wetlands; enhance 3,500 acres of State and 5,850 acres of private lands and enhance 1,100 acres of federal, and 46,000 acres of private lands in the Suisun Marsh; and enhance habitat on 63,392 acres of agricultural land in the Delta. The Venture was created to implement the North American Waterfowl

Management Plan. {Dave Pollan -- USFWS, 916-979-2710}

Coastal Conservancy: This group, part of the Resources Agency, has jurisdiction over the San Francisco Bay, the coastal zone, and over watersheds that potentially affect the Bay. The Conservancy has the following six programs: 1) Resources Enhancement Program which acquires or restores coastal habitat, including wetlands, riparian areas, and dunes; 2) Coastal Restoration Program restores developments in an orderly or environmentally-friendly manner; 3) Urban Waterfront Restoration Program restores docks, ports, wharves; 4) Agricultural Conservation Program purchases or acquires conservation easements on agricultural land to insure the land remains in agricultural production; 5) Site Reservation Program is charged with acquiring and holding land for other interested agencies or organizations until funding can be secured; and 6) Public Access Program builds trails to and along the shoreline. {Neal Fishman -- Coastal Conservancy, 510-286-1015}.

Central Valley Project Improvement Act Anadromous Fish Restoration Plan: Pursuant to the Central Valley Project Improvement Act, the U.S. Fish and Wildlife Service has developed a draft plan for doubling the natural production of anadromous fish (salmon, striped bass, shad, sturgeon) in the watersheds of the Sacramento-San Joaquin Delta. {Marty Kjelson -- USFWS, 209-946-6400}

Central Valley Project Improvement Act (CVPIA) Fish & Wildlife Restoration: The CVPIA mandated a number of activities associated with the enhancement of fish and wildlife resources in the Central Valley. These include (but are not limited to): a program reestablishing a natural and sustainable anadromous fishery on the San Joaquin River from Friant Dam to the Delta; an effort to double anadromous fisheries in all other Central Valley streams and rivers by 2002 [*see above*]; a dedication of 800,000 acre-feet of CVP yield to be used for implementing fish, wildlife, and habitat restoration programs; additional mitigation of fishery impacts associated with operations of the CVP's Tracy Pumping Plant and the Contra Costa Canal Pumping Plant; installation and operation of a structural temperature control device at Shasta Dam; improvement of fish passage at the Red Bluff Diversion Dam and the Anderson-Cottonwood Irrigation District Diversion Dam; enhancement of the Coleman National Fish Hatchery and the Keswick Dam Fish Trap; replenishment of spawning gravel throughout the system; construction of a fish barrier at the head of Old River; a comprehensive Central Valley fish and wildlife assessment project; addressing fish losses at unscreened diversions; development of a Water Augmentation Plan to facilitate offsetting the 800,000 AF dedication to fish and wildlife; enhancement of ability to deliver water to refuges in the Central Valley and to firm-up those supplies; and, payments to farmers to flood their fields to serve as seasonal wetland habitat. {Pat Rivera -- USBR, 916-979-2326}

Commercial Ocean Fishing Regulation: Pursuant to the Magnuson Fishery Conservation and Management Act, the U.S. Department of Commerce regulates ocean harvest to protect against over fishing. The Pacific Fishery Management Council recommends regulations to the Department of Commerce. In California waters, sport harvest is regulated by the California Fish and Game Commission, while the Legislature regulates the commercial fishery. The Legislature has given

authority to the Director of the Department of Fish and Game to conform state regulations with federal regulations. Enforcement is carried out by the Coast Guard, the U.S. Fish and Wildlife Service, and the Department of Fish and Game. {L.B. Boydston -- DFG, 916-653-7794}

Corps of Engineers Little Holland Tract and Liberty Island Reconnaissance Investigations: The COE, in coordination with the USFWS, has initiated an evaluation of a proposal to restore fish and wildlife habitat on portions of Little Holland Tract and Liberty Island as mitigation for past impacts of the Sacramento River Flood Control Project. These areas are located in the northwestern Delta at the southern end of the Yolo Bypass. The major focus of the restoration effort is to restore tidal wetlands and enhance SRA and other aquatic habitat conditions for delta smelt, Sacramento splittail, and winter-run chinook salmon. The principal restoration opportunities exist on the nearly 5,000 acre Liberty Island while existing habitat on Little Holland Tract (approximately 1,600 acres) is already adequate. Depending on the outcome of this project, these areas could become components of a new USFWS refuge in the Delta. (Caroline Wilkinson, USFWS, 916-979-2107).

Cosumnes River Preserve (CRP): Located between Sacramento and Stockton, the CRP was established to protect a unique Valley Oak Riparian Forest habitat type, including wetlands. The Nature Conservancy (TNC) began acquiring land in 1986. The preserve was dedicated in 1987. Ducks Unlimited, TNC, DFG, the federal Bureau of Land Management and the Sacramento County Department of Parks and Recreation own and manage the CRP, currently encompassing 5,000 acres. As of the summer of 1993, 201 acres of riparian forest had been planted, with a goal of 350 acres. Anheuser-Bush has provided a grant of $225,000, which will be matched by the National Fish and Wildlife Foundation to cover operational costs. Plans are to continue to expand the Preserve into the water shed of the Cosumnes River and west into the Delta. {Rich Reiner -- TNC, 916-684-2816}

Delta Native Fishes Recovery Team: The team has developed a draft Recovery Plan addressing the needs of seven species of fish resident (delta smelt, Sacramento splittail, longfin smelt, green sturgeon, spring-run, late fall-run, and San Joaquin fall-run chinook salmon) to the Sacramento-San Joaquin Delta. The team is comprised of fishery biologists from both state and federal agencies, consultants, and academics who worked together with a goal to construct a multi-species recovery plan. Currently, no plans are being undertaken to finalize the draft version due to a shortage of funds. {Dale Sweetnam -- DFG, 209-948-7800}

Delta Protection Commission (DPC): The DPC was established by the Legislature to create a baseline regional land-use plan for the five Delta counties to conform to. It adopted its plan in early 1995. Upon adoption by the Counties of necessary amendments to their plans, or waivers to specifics of the DPC plan, the DPC is to become an appellate body for parties who do not receive satisfaction at the County level. The DPC is comprised of representatives from all of the Counties, as well as state agencies and stakeholders within the region. {Margit Aramburu -- DPC, 916-776-2292}

Delta Protection Commission Wetland Inventory: The Delta Protection Commission developed a listing of wetlands projects and programs within the legal Delta. {Margit Aramburu -- DPC, 916-776-2292}

Delta Pumping Plant Fish Protection Agreement: In 1986, DFG and DWR entered into an agreement to offset fishery losses at the SWP facilities. Since its inception funds have been provided to raise striped bass, construct and install screens, begin construction of a hatchery on the Tuolumne River, and fund numerous other actions to benefit aquatic resources, particularly salmon and striped bass. Further discussions were initiated to resolve remaining issues pertaining to fishery impacts, including addressing indirect losses and the potential for additional facilities, as called for in Article VII of the 1986 agreement. In 1990, the Bureau of Reclamation joined in the Article VII process. Initial Article VII negotiations are now completed with the recent signing of an agreement. That agreement recognizes that the December Accord and subsequent 1995 Water Quality Control Plan, is expected to address many of the other remaining direct and indirect impacts. DWR will seek permission to undertake pumping beyond current constraints imposed by the Army Corps of Engineers and is now in the process of completing the necessary environmental documentation. {Perry Herrgesell -- DFG, 209-948-7800}

Delta Wetlands Project (DWP): The DWP is a private initiative to utilize four Delta islands for water storage and habitat development. The project proponents would seek to market the water they store or assist in water transfers. Two islands, Webb Tract and Bacon Island, totaling approximately 11,000 acres would be used as reservoir islands. Holland Tract and Bouldin Island, totaling 9,000 acres, would be managed for a diverse assemblage of wildlife including greater sandhill crane, Swainson's hawk, and wintering waterfowl. {John Winther -- DWP, 510-283-4216}

Department of Water Resources' Western Delta Program: Water management planning in the west Delta was initiated by the State Water Project to address the issues of land subsidence, levee instability, and wildlife habitat. This has necessitated a need to protect these islands from flooding and to protect the Delta's water quality for beneficial use, including maintaining and enhancing the biodiversity.

Planning in the west Delta on the islands of Twitchell and Sherman is focused on changing land use practices to stop or reverse the ongoing land subsidence, while providing significant wildlife and wetland habitat values. There has been a good response of willing land owners to sell their agricultural lands to the Department of Water Resources based on an independent appraised value. The Department has acquired 3,000 acres of land on Twitchell Island and about 5,700 acres on Sherman Island.

Specifically, the objectives of the plan to develop Twitchell and Sherman islands are:

* To investigate agricultural and wetland/wildlife management options for implementation on both islands.
* To respond to federal and State policies for the enhancement and expansion of

wetlands.

* To alter land use practices to provide substantial flood control benefits, additional protection to Delta water quality and supply reliability, and potential additional recreational opportunities in the Delta.
* To develop habitat to be available as mitigation for impacts associated with ongoing DWR Delta water management programs.
* To explore Category III applicability in connection with the December 15, 1995 Accord.
* To test programs, such as screening diversions, shifting the timing of diversions, measuring the reduction of subsidence due to better land management, and controlling the timing of agricultural drainage to reduce TDS and organics.

{Dave Brown -- DWR, 916-653-6673}

DFG Central Valley Salmon and Steelhead Management and Restoration Program: This program has four discrete elements which are to be integrated with ongoing activities in the field. They are the Four Pumps Habitat Restoration Coordination, Sacramento Valley Habitat Restoration Coordination, Winter-run Chinook Coordination, and Winter-run Chinook Data Analysis. The mission of this multifaceted program is "to manage, restore, and enhance Central Valley anadromous fish populations and the habitats upon which they depend for their ecological values and for their use and enjoyment by the public." This program is intended to facilitate implementation of the November 1993 report of recommendations entitled "Restoring Central Valley Streams: A Plan for Action." {Terry Mills -- DFG, 916-653-6194}

DFG Delta/Bay Enhanced Enforcement Program (DBEEP): DBEEP was initiated in FY 1991 through an agreement between DFG and DWR. Five warden positions and one lieutenant were located in the Delta for the purpose of curtailing illegal fishing activities. In FY 1994, the Bureau of Reclamation began funding four additional warden positions designed to curtail illegal fishing activities in the watersheds of the Sacramento-San Joaquin Delta. {DeWayne Johnston -- DFG, 916-653-4094}

DFG Delta Mitigation Issue Team (DMIT): In response to the increasing mitigation activities in the Delta, the DMIT was created by the DFG to coordinate the development of appropriate DFG policies regarding mitigation land acquisition; the determination of required funds for acquisition, operation and maintenance of mitigation lands; methodologies for the development of wildlife habitat; and the establishment of guidelines describing DFG's role in managing mitigation lands. {Patricia Brantley -- DFG, 209-948-7800}

DFG Fish Screening and Fish Passage Coordination Project: There is currently no comprehensive inventory of water diversions, fish screens, fish passage barriers, and fish passage devices in California. This project is meant to fill that void. It is beginning with the Central Valley, with an emphasis on addressing impacts to winter-run salmon and Delta smelt. In addition to

developing the database, the project is: reviewing and evaluating developments in the fields of fish screening and fish passage facilities; evaluating and prioritizing water diversions that should be modified to protect fisheries in inland waters; installing fish screens and implementing other corrective actions; and, providing evaluations of the benefits and costs of correcting fishery impacts. {Dan Odenweller -- DFG, 916-654-2731}

Ducks Unlimited VALLEY CARE Program: This program is DU's comprehensive plan to bridge the gap between conservation and the private landowner in the Central Valley, particularly rice farmers. A primary component of the program are efforts to maintain agricultural productivity on rice farms while satisfying the habitat needs of migratory waterfowl. Working with the California Rice Industry Association, the water constituencies, other conservation groups and individual rice growers, DU manages this program, which includes the production and distribution of both general information materials as well as technical guides for property owners. {Steve Burton -- DU, 916-363-8257}

Fall Head of Old River Barrier: Since 1963, the DWR, in cooperation with DFG and USBR, has installed a temporary rock barrier at the head of Old River in the fall to improve DO levels in the San Joaquin River between Stockton and Turner Cut. This barrier helps improve conditions for upstream migrating adult salmon that could be blocked by low DO levels. In some years this barrier can also help the downstream migration of yearling salmon released in the fall from the Merced River Hatchery. {Curt Schmutte -- DWR, 916-653-5422}

Governor's California Wetlands Conservation Policy (August 1993): The goal of the California Wetlands Conservation Policy is to establish a policy framework and strategy that will:

* Ensure no overall net loss and achieve a long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California in a manner that fosters creativity, stewardship and respect for private property.

* Reduce procedural complexity in the administration of State and Federal wetlands conservation programs.

* Encourage partnerships to make landowner incentive programs and cooperative planning efforts the primary focus of wetlands conservation and restoration.

The policy means that are employed to achieve these objectives are largely three in nature: 1) Statewide policy initiatives; 2) Three geographically based regional strategies in which wetlands programs can be implemented, refined and combined in unique ways to achieve the goals and objectives of the policy; and 3) Creation of an interagency wetlands task force to direct and coordinate administration and implementation of the policy. {Craig Denisoff -- Resources Agency, 916-654-2753}

Grizzly Slough Wildlife Area: The DWR has acquired a 489 acre area at the northeastern edge of the Delta near the town of Thornton. This area contains existing dense riparian forest and has an excellent potential, in other parts of the property, to enhance its fish and wildlife values. While a portion of the property (approximately 34 acres) is already set aside to offset riparian looses associated with the Thornton-New Hope Levee project, the balance is available for restoration as riparian, oak woodland, and permanent and seasonal wetland. In the course of creating this habitat, high quality borrow material will be made available for levee projects throughout the North Delta to address levee stability problems. {Curt Schmutte -- DWR, 916-653-5422}

Inland Wetlands Conservation Program (IWCP): This program was enacted in 1990 by a legislative decision authorizing the Wildlife Conservation Board (WCB) to implement the goals and objectives of the Central Valley Joint Venture effort to enhance migratory bird populations by protecting and restoring wetland habitat in the Central Valley of California. The WCB is authorized to award grants or loans to non-profit organizations, local governmental and state agencies. In addition, the WCB is authorized to acquire, lease, rent, sell, or exchange any land or options acquired, with the proceeds supporting other IWCP projects. {Marilyn Cundiff-Gee -- WCB, 916-445-8448}

Interagency Ecological Program (IEP): This program was established to bring together various state and federal agencies so that they could better coordinate their activities related to various water management issues. These include coordinating studies and evaluations of the hydrodynamics of the Bay-Delta, of fish protective facilities (screens, barriers, return facilities), and general study of species within the Bay-Delta Estuary. {Pat Coulston -- DFG, 209-948-7800}

Introduced Aquatic Plant Species Control: There is currently no coordinated interagency effort dealing with the exclusion, detection, and eradication of introduced aquatic plant species in the Sacramento-San Joaquin Delta. The Department of Boating and Waterways (DBW) has budgeted a large amount of time and money for the detection and management of water Hyacinth in the Delta. The DBW is also researching ways to contain and eradicate potential plant species such as *Elodiea* and *Egeria*. The Integrated Pest Control Branch of the California Department of Food and Agriculture (CDFA) is a lead agency in detecting and controlling Hydrilla throughout the State. The Department of Fish and Game and the Department of Water Resources also budget a portion of their funds for the detection and management of introduced plant species through out the State. {Valerie VanWay -- DBW, 916-322-1808; Ross O' Connel -- CDFA, 916-654-0768}

Introduced Aquatic Species Control: There is currently no coordinated effort to curtail the introduction of aquatic species into the Sacramento-San Joaquin Delta. The Department of Fish and Game (DFG) Wildlife Protection Division does work to prevent the intentional and unintentional introduction of non-native species into the State. The Department of Food and Agricultural (DFA) at border inspection stations examines all vehicles and vessels entering the State for prohibited species. Currently the DFG, DFA, and Department of Water Resources (DWR) are working together to develop a plan that would deter the entry of zebra mussel *(Dreissena polymorpha)* through

1) an intense border inspection of boats from areas where zebra mussels are present and
2) tougher restrictions on the import of bait fish from states where zebra mussels are known to exist.

Funding for this program is limited and the controlling factor in establishing this program. {Mr. Bill Sandige -- CDFA, 916-653-1440}

Medford Island Multi-Species Protection and Enhancement Project: This island is privately owned and is currently being offered as a mitigation bank for projects seeking mitigation credits. In addition to the mitigation bank the project would improve the 14,000 lf of levee to facilitate the flooding and creation of shallow water habitat. This shallow water habitat could benefit Delta fish species and divert fish that are entrained to the export facilities due to velocity queues. This project has received funding from the SB 34 to improve the island's levee. The Medford project is currently petitioning for funds from the Category III to implement wetland, riparian, and estuarine restoration. {Kent Smith --McCollum Associates; 916-488-0332}

Montezuma Wetlands Project: This private project seeks to beneficially reuse dredged sediment to restore subsided tidal marshlands and seasonal wetlands in the Suisun Marsh by raising them back to intertidal elevations. {Doug Lipton -- Levine/Fricke, 510-652-4500}

National Estuarine Reserve Research System: This program was established by the Coastal Zone Management Act of 1972 and is administered by NOAA. It is a non-regulatory, state-federal program seeking to establish a system of reserves representing the nation's diverse estuarine types. It will contribute to the protection of wetland areas and provide a framework for long-term research and monitoring. The Bay-Delta has been nominated by Governor Wilson for inclusion in the system. {Mike Vasey --San Francisco State University, 415-338-1957}

North Bay Wetlands Protection Program: This program is a voluntary partnership between the BCDC, Marin, Sonoma, Napa, and Solano counties, and the cities of San Rafael, Novato, American Canyon and Vallejo. The purpose of the program is to assure protection, enhancement, and restoration of North Bay wetlands while permitting appropriate development and compatible uses, such as agriculture, to occur in a more predictable and expeditious manner. {Jeffrey Blanchfield -- BCDC, 415-557-3686}

Port of Sacramento Mitigation Bank: The Port of Sacramento has signed a Memorandum of understanding with the Department of Fish and Game (DFG) to create a mitigation bank on about 420 acres of land parallel to the Deepwater Ship Channel. {Dave Zezulack --DFG, 916-358-2929}

Prospect Island Fish and Wildlife Habitat Restoration Project: The objective of this program is to reduce levee maintenance costs while providing habitat for fish and wildlife resources. The Bureau of Reclamation owns the island and has been investigating alternatives for restoring a major part of the island to tidal habitat. A multi-agency team has been working with the COE to design a restoration project that optimizes fish and wildlife values particularly for delta smelt, winter-run

chinook salmon, and wintering waterfowl. {Leslie Lew -- U.S. Corps of Engineers, 916-557-6929}

Resource Agency Conservation Banking Policy: The executive and legislative branches have endorsed the use of conservation banks as a means to accomplish important resource management goals. A conservation bank is a single parcel, or a series of contiguous or non-contiguous parcels, of habitat which is managed for its natural resource value. The resource benefits derived from this management regime are sold as "credits" to project proponents who seek mitigation opportunities to compensate for resource impacts elsewhere. Credits may be generated to meet any number of resource conservation needs including compensation for impacts to wetlands, threatened or endangered species, environmentally sensitive habitat areas, mudflats, sub-tidal areas, and less sensitive resources. {Craig Denisoff -- Resources Agency, 916-654-2753}

Sacramento River Fish Migration Study: This study, by the Army Corps of Engineers, determined there is a federal interest in proceeding into feasibility studies for facilitating anadromous fish migration between the Sacramento River and the Pacific Ocean. The feasibility phase, looking at various measures, including restoration of shaded riverine aquatic and riparian vegetation, will commence in early fall 1995. {Rick Dreher -- Army Corps of Engineers, 916-557-6769}

Salmon and Steelhead Hatchery Program: DFG operates four salmon and steelhead hatcheries in the Central Valley: Feather River Hatchery, Nimbus Hatchery (American River), Mokelumne River Hatchery and the Merced River Hatchery. The U.S. Fish and Wildlife Service operates the Coleman National Fish Hatchery (Battle Creek). These hatcheries have production goals of close to 30 million fish per year. {Gene Fleming -- DFG, 916-653-4729}

San Francisco Bay Joint Venture: The Joint Venture is a partnership of public agencies and conservation organizations focused on wetlands acquisition, restoration and enhancement. It will utilize the results of the Regional Wetlands Habitat Goals Project as well as other efforts. {Craig Denisoff -- Resources Agency, 916-654-2753}

San Francisco Bay National Wildlife Refuge Complex (SFNWRC): The goal is to preserve, restore, and enhance San Francisco Bay's natural ecosystem. The U.S. Fish and Wildlife Service is the major landholder and manages the SFNWRC. These holdings include the San Francisco National Wildlife Refuge, San Pablo Bay National Wildlife Refuge, and the Antioch Dunes National Wildlife Refuge. The purposes of the refugia are preservation of a diversity of habitats for wildlife, management of migratory bird populations, and management of endangered species. Under federal legislation, the SFNWRC is authorized to acquire 43,000 acres in the Bay Area. Currently, the SFNWRC holds 19,058 acres (74% salt ponds, 18% salt marsh, 6% uplands, 1% seasonal wetlands, and 1% mudflats/open water). {San Francisco Bay National Wildlife Refuge -- 510-792-0222}

San Francisco Bay Regional Wetlands Habitat Goals Project: This project is being overseen by the San Francisco Regional Water Quality Control Board with multi-agency resource manager involvement and assistance by the SFEI, in concert with several sponsoring state and federal

agencies, to develop regional wetlands habitat goals through a scientific/technical process. The area of study stretches from the Golden Gate to the western margin of the Delta at the confluence of the Sacramento and San Joaquin rivers. The Project will eventually produce a series of conceptual options in both written and graphical formats describing and showing the regional wetlands mosaic needed to restore and preserve the region's ecological health. These options will serve as the basis for a regional wetlands protection policy to assist Bay Area governments with the development of local action plans. {Craig Denisoff -- Resources Agency, 916-654-2753}

San Francisco Estuary Institute (SFEI): The SFEI is the successor of the Aquatic Habitat Institute. Its mission is to *provide the scientific understanding necessary to manage the complex and biologically rich San Francisco Estuary.* Formed in 1994, its Board of Directors includes highly place government officials, leaders in the public and private sector user community, and environmental interests. A major focus of the SFEI is to coordinate and implement the Regional [environmental] Monitoring Strategy recommended as a component of the CCMP of the SFEP. {Josh Collins -- SFEI, 510-231-9539}

San Francisco Estuary Project (SFEP): The SFEP was authorized by Congress as part of a national program in the mid-1980s. The SFEP, through the work of a broad-based committee of public agency and private interest representatives, developed a Comprehensive Conservation Management Plan (CCMP) for the Bay-Delta. The CCMP focused exclusively on the biological needs of the Estuary as they related to a number of resource management issues, e.g. wetlands, land use, fisheries, etc., and made numerous recommendations for addressing those needs. The CCMP was conditionally concurred to by Governor Wilson. Implementing funding legislation has not been successful in Washington. Nevertheless, the SFEP maintains a limited staff at the San Francisco Regional Water Quality Control Board and an Implementation Committee meets quarterly to facilitate CCMP implementation through the activities of other programs. Several geographic teams have been assembled and one, the Delta Geographic Team, meets quarterly to facilitate restoration and protection activities in the Delta. {Marcia Brockbank -- SFEP, 510-286-0738}

San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (Plan): The main objective of the Plan is to establish a program to conserve, protect and maintain viable populations of native special status species within San Joaquin County. The Plan coordinates mitigation and management measures so that development actions will satisfy, without duplication or unnecessary delay, applicable provisions of state, federal and local laws. The Plan includes evaluation of the status of species, potential impacts, habitat availability, etc., to provide opportunities for the protection and enhancement of special status species and their habitats. {Cindy Chadwick -- DFG, 916-358-2929}

San Joaquin River Management Program: This program was authorized by the Legislature in 1990. It created an advisory council and various action teams to develop and report a plan of action for addressing resource needs of the San Joaquin River. In 1991, the Resources Agency entered into an MOA with the Bureau of Reclamation to provide cost-share support. The objectives of the

program were folded into the CVPIA in 1992. In 1994, the Legislature directed implementation be coordinated by the advisory council. The Program's recommendations fall into three categories: projects, studies, and acquisitions. The area covered by the program runs from Friant Dam downstream through the northern boundary of the South Delta Water Agency just south of Victoria Canal and all other tributaries of the San Joaquin River up to the first major dam. {Dale Hoffman-Floerke -- DWR, 916-227-7530}

Sonoma Baylands Project (SBP): Sponsored jointly by the California Coastal Conservancy and the U.S. Army Corps of Engineers, the SBP seeks to beneficially reuse dredged sediment to restore subsided tidal marshlands and seasonal wetlands by raising them back to intertidal elevations. Using up to 2.5 million cubic yards of dredged sediment, the SBP will restore 348 acres of tidal salt marsh and seasonal wetlands. {Coastal Conservancy -- 510-286-0470}

Stone Lakes National Wildlife Refuge: This project is coordinated by the USFWS and with aid from other State, County, and private agencies. Currently the project has acquired over 5,000 acres of land and is working to improve this land and acquire additional properties. This project is envisioned to restore and protect wetland and upland habitats to benefit migratory birds, special status species, and warm water fisheries in the Stone Lake Basin. Educational and wildlife viewing opportunities will be available to the public. {John Castellano -- USFWS, 916-979-2085}

Striped Bass Management Project (SBMP): The SBMP's goal is to use various measures to stabilize, restore, and then improve the striped bass fishery while not jeopardizing the continued existence of other species. SBMP activities include: seeking actions to minimize entrainment in water diversions, seeking beneficial Delta outflows, seeking methods of slowing the rapid transfer of water through the interior Delta channels, seeking reductions in toxic substances in the water column, seeking restrictions on channel dredging and spoil disposal in Delta waters, reducing illegal take, seeking curtailment of introductions of exotic species, monitoring the status of striped bass, maintenance of sport fishing regulations consistent with protection of the species, and managing mitigation programs involving both hatchery production of striped bass and net-pen rearing and release of striped bass salvaged at the SWP and CVP. {Don Stevens -- DFG, 209-948-7800}

Suisun Marsh Wetland Diversion Screening Program: This program represents a private initiative of the Suisun Resource Conservation District with assistance from the CWA and several CALFED agencies to begin a program of assessing and screening diversions serving wetlands in the Suisun Marsh. The program has three components, diversion consolidation, assessment of fish entrainment to determine the highest risk diversions, and screening high priority diversions. The first phases of the program have been funded through a combination of sources including Tracy Fish Agreement, Four Pumps Agreement, CVPIA, and Category III. {Lee Lehman -- SRCD, 707-425-9302}.

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Suisun Marsh Preservation Agreement (SMPA): The SMPA is designed to protect the brackish nature of Suisun Marsh by ensuring that the Bureau of Reclamation and the Department of Water Resources provide a dependable supply of adequate quality water for the Marsh, which contains over ten percent of California's remaining natural wetlands. The SMPA defines the obligations of the Bureau and DWR under their joint Suisun Marsh Plan of Protection EIR that was developed in response to directives from the State Water Resources Control Board. The SMPA, which defines minimum water quality standards for the Marsh, was signed by DFG, DWR, the Bureau and the Suisun Resource Conservation District in 1987. {Frank Wernette -- DFG, 209-948-7800}

Tidal Wetlands Species Recovery Plan (Plan): The objectives of the Plan is to preserve, protect and restore tidal marsh ecosystems. Currently, this program has initiated a new comprehensive recovery plan to benefit both listed and non-listed species. The Plan will produce a prioritized approach to wetland restoration and is consistent with the goals of the SFEP's CCMP. {USFWS -- 916-979-2730}

Tracy Fish Agreement (Agreement): The purpose of this Agreement between DFG and the Bureau of Reclamation is to implement measures to reduce to the extent feasible and offset or replace remaining direct losses of chinook salmon and striped bass in the Delta caused by the diversion of water at the Tracy Pumping Plant (TPP). {Ken Lentz -- USBR, 916-978-4923}

Upper Sacramento River Fish and Wildlife Habitat Restoration Study: This study by the Army Corps of Engineers, completed in 1994, resulted in the Corps initiating feasibility studies to develop a comprehensive corridor management plan to balance flood control, erosion control, environmental restoration, and other water resource purposes along the Sacramento River, and identified ten specific sites in the study area (Feather River confluence near Verona north to Red Bluff) at which restoration should be implemented. {Rick Dreher -- Army Corps of Engineers, 916-557-6769}

Upper Sacramento River Fisheries and Riparian Habitat Management Plan (Plan): The purpose of this plan is to protect, restore and manage a continuous riparian ecosystem along the Sacramento River and the lower reaches of its tributaries, and also to restore and enhance the upper River's salmon and steelhead fisheries. The Plan was developed by an advisory committee created by the Legislature. The Plan was submitted to the Legislature in 1989, when implementation of its 22 specific actions was declared state policy. {Ralph Hinton -- DWR, 916-529-7393}

Wetlands Reserve Program (WRP): The goal of this program lead by the U.S. Department of Agricultural is to acquire agricultural lands through permanent easements and restore them to wetlands. In order to be considered for this program the lands must have the potential to contribute to Delta wetland ecosystem and meet the following criteria: 1) ag land with restorable wetland; 2) lands adjacent to wetlands; 3)wetlands restored under federal or State programs; 4) conservation reserve lands; and 5) riparian area. To date this program has acquired over 6,500 acres of farm land for about 7 million dollars. 1995 is the first year that this program has been offered nationwide. {US Department of Agriculture}

Winter-run Chinook Salmon Recovery Plan (Plan): This Plan was required subsequent to the ESA listing of the Winter-run. A team of experts has developed the plan at the request of the National Marine Fisheries Service, and completed a draft in mid-1995. The Plan contains seven broad goals to guide recovery efforts: (1) protect and restore spawning and rearing habitat, (2) improve survival of downstream migrants, (3) improve upstream fish passage, (4) prevent extinction through artificial propagation, (5) reduce harvest and incidental take in commercial and recreational fisheries, (6) reduce impacts of fish and wildlife management programs, and (7) improve understanding of life history and habitat requirements. {Terry Mills -- DFG, 916-653-6194}

Woodbridge Ecological Reserve: The DFG operates a 352 acre ecological reserve (2 separate parcels north 145 acres, south 207 acres) in the northeastern Delta primarily as habitat for the state listed greater sandhill crane. It currently represents the most important crane roosting area in the Delta, but also provides habitat for a wide variety of wintering shorebirds and waterfowl. This property is currently operated on a limited budget and needs substantial improvements to the water delivery system. {Dan Gifford -- DFG, 209-369-8851}.

Yolo Basin Wetlands Project: The purpose of this project is to create and restore wetlands within the Yolo Basin, particularly in the vicinity of the Yolo Basin flood control bypass. It was initiated in response to an Army Corps of Engineers' proposed modification to the Sacramento River Flood Control Project. The total acreage of the project is approximately 4,800 acres, of which 3,000 acres have already been acquired by the state. {Roger Scoonover -- DFG, 916-666-3407}

Yolo County Habitat Conservation Plan (Plan): Primary goal of the Plan is the conservation of listed and candidate species that may occur within eight areas of the county where future growth expected to occur. The project is still in the planning phase, though four technical reports (ecological, land use, biological, agricultural resources) were completed in April 1995. {Roger Scoonover -- DFG, 916-666-3407}

System Vulnerability

Delta Flood Protection Act: Serious flooding problems in 1986 in the Sacramento-San Joaquin Delta resulted in State Legislature passing the Delta Flood Protection Act of 1988 (SB 34). The SB-34 is comprised of two components: Delta Levees Maintenance Subventions Program (DLMSP) and Special Flood Control Projects (SFCP). Through the Delta Flood Protection Fund, the DLMSP provides financial assistance to local agencies for maintenance and improvement of non-Federal control project levees in the Sacramento-San Joaquin Delta. The SFCP funds allocated toward flood control projects on Bethel, Bradford, Holland, Jersey, Sherman, Twitchell islands, and Hotchkiss and Webb tract and for the towns of Thornton and Walnut Grove. Six million dollars is appropriated annually through the Delta Flood Protection Fund to the Department of Water Resources (DWR) for expenditure and allocation to each of the DLMSP and for SFCP. The Delta Maintenance Subventions Program is administered by the DWR's Central District Subventions and Flood Management Section. The Special Flood Control Projects Program is administered by DWR's Delta Levees and Contracts Section within the Division of Planning. In 1994 40 districts filed final claims that totaled $7.7 million for DLMSP work accomplished on 376.8 miles of local non-project levees. The total funds allocated to SFCP in 1994 were $6,254,000. {Curt Shumutte -- DWR, 916-653-5422}

Federal Flood Control Project: In 1917, Congress authorized the Sacramento Flood Control Project, which was completed by the U.S. Corps of Engineers in 1960. The Sacramento Flood Control Project provides flood control for a portion of the Delta the plan was designed to include a system of levees and bypasses for transporting floodwater away from protected areas. {U.S. Corps of Engineers, 916-557-6769}

Senate Bill 1065: In 1991, Senate Bill 1065 was signed into law provides supplemental guidance for SB 34 program activities to assure that these flood protection activities result in no net loss of fish or wildlife habitat and to provide $3 million to mitigate past impacts. SB 1065 allocated the $3 million to Department of Fish and Game (DFG) to develop mitigation areas for SB 34-related net long-term losses of riparian, fisheries, and wildlife habitat. {Ed Littrell -- DFG, 916-358-2929}

Water Supply

AB 3030: Section 10750, et seq. of the California Water Code (AB 3030) provides a systematic procedure for an existing local agency to develop a ground water management plan. This section of the code provides such an agency with the powers of a water replenishment district to raise revenue to pay for facilities to mange the basin (extraction, recharge, conveyance, quality). We are aware of 139 agencies that are embarked on developing an AB 3030 ground water management plan. {Carl Hauge -- DWR, 916-327-8861}

The Agricultural Water Management Planning Act, Water Code Section 10800: The Act mandates agricultural water supply of greater than 50,000 acre feet of water to submit a plan to DWR addressing whether there are significant opportunities to save water. {Ed Craddock -- DWR, 916-653-9493}

Agricultural Water Suppliers Efficient Management Practices Act Water Code Section 10900: The Act requires DWR to establish a task force to review efficient agricultural practices. Currently, members of the committee are working on a Memorandum of Understanding that will promote efficient irrigation practices. {Ed Craddock -- DWR, 916-653-9493}

California Water Code: Twenty-two kinds of districts or local agencies are identified in the California Water Code with specific statutory provisions to manage surface water. Some of these agencies also have statutory authority to impose some forms of ground water management. Some of the agencies have done so; others have not. {Carl Hauge -- DWR, 916-327-8861}

Delta Wetlands Project (DWP): The DWP is a private initiative to utilize four Delta islands for water storage and habitat development. The project proponents would seek to market the water they store or assist in water transfers. Two islands, Webb Tract and Bacon Island, totaling approximately 11,000 acres would be used as reservoir islands. Holland Tract and Bouldin Island, totaling 9,000 acres, would be managed for a diverse assemblage of wildlife including greater sandhill crane, Swainson's hawk, and wintering waterfowl. {John Winther -- DWP, 510-283-4216}

DWR Water Conservation Branch: The Department of Water Resources Water Conservation Branch is staffed with 15 people who address both urban and agricultural water conservation efforts. Currently, efforts to promote agricultural water conservation include projects to reduce agricultural drainage and to complete the memorandum of agreement concerning agricultural irrigation practices. In the case of urban water users this Department is working with local agencies to help implement the Urban Best management Practice MOU and to collect information concerning conservation oriented water rate structures. {Ed Craddock -- DWR, 916-653-9493}

Interim North Delta Program: This program is to provide flood control and to improve project water transfer capabilities in the North Delta. Consistent with the no net loss policy, the planning objectives and mitigation measures for this program include plans to acquire wetlands acreage in the proposed Beach and Stone Lake wildlife refuge areas, acquire acreage to be excavated and graded for wetlands and habitat development in coordination with borrow material, and create channel berms of high habitat and wetlands value. Funding for this project include State Water Project funds and cost sharing for flood protection. {Stein Buer -- DWR, 916-653-6623}

Interim South Delta Water Management: This program is to improve reliability of the State Water Project and increase project operation flexibility to reduce fishery impacts through the expansion of the Clifton Court Forebay and South Delta channels and through the acquisition of permit in increase pumping capability at Banks Pumping Plants. This project would satisfy the no net loss goals through the acquisition of acreage to develop wildlife habitat and possible wetland habitat. {Mike Ford -- DWR, 916-653-8384}

Low Interest Water Conservation Loan Program: The Department of Water Resources administers low interest water conservation loan program funded under three bond acts: Water Conservation Bond Law of 1988 (Proposition 82 - $60 million; Water Conservation and Water Quality Bond Law of 1986 (Proposition 44-$75 million) and; the Clean Water Bond Law of 1984 (Proposition 25-$10.5 million). The water conservation projects funded under these programs typically involve the replacement of leaking water mains, concrete lining of irrigation, canals, and piping irrigation ditches. {Ed Craddock -- DWR, 916-653-9493}

Model Urban Landscape Ordinance, California Code, Chapter 7 (AB 325): Provides a framework ordinance for efficient landscape irrigation. The model ordinance contains provisions for the use of recycled water supplied through dual distribution systems.

Reclaimed Water: Nonpotable Uses, California Code, Chapter 553 (AB 174): Declares the use of potable domestic water for Nonpotable purposes, including cemeteries, golf courses, parks, highway landscaped areas, and industrial irrigation uses, to be a waste or unreasonable use of such water when suitable, reasonable-cost reclaimed water is available. {Ed Craddock -- DWR, 916-653-9493}

Reclaimed Water: Toilet Flushing, California Code, Chapter 723 (AB 1698): Expands water Code section and authorizes a public agency to require the use of reclaimed water for toilet and urinal flushing in nonresidential structures, if it is of adequate quality and obtainable at a reasonable cost.

Sanitary Districts: Water Reclamation, California Code, Chapter 306 (AB 1015): Enables sanitary districts to participate in bond/loan programs and authorizes DWR to assist sanitary districts in applying for necessary permits for cost-effective water reclamation facilities; requires DWR to confer and cooperate with the applicants during the application and approval process.

Special Legislation: In some parts of California, special legislation has been enacted to form ground water management districts, or water management agencies. This legislation allows such districts to enact ordinances to limit or regulate extraction. There are 10 of these water management agencies in California, but only a few have been active in ground water management. {Carl Hauge -- DWR, 916-327-8861}

Urban Best Management Practices Memorandum of Understanding (BMP-MOU): Includes a commitment by urban water suppliers to prepare water recycling master plans. DWR is working with local agencies to help implement the BMP-MOU and to collect information concerning conservation oriented water rate structures.

Urban Water Management Plans, California Water Code, Chapter 938 (AB 1869): Requires urban water management plans to include a description and evaluation of reclamation activities. The plan requires urban water supplies serving more than 3,000 customers or more than 3,000 AF to identify reclamation practices used by the agricultural water supplier; describe any reclamation programs, including treatment and distribution facilities; identify the quantity and source of reclaimed water delivered to and by the supplier; and identify economically feasible measures for water reclamation. {Ed Craddock -- DWR, 916-653-9493}

Water Recycling Act of 1991, California Code, Chapter 187 (AB 673): This act establishes a statewide goal of recycling 700,000 acre-feet of water by the year 2000, and one million acre-feet by 2010; defines "recycled water" as a valuable resource; and requires regional water quality control boards to consider, when establishing water quality objectives, the need to develop and use recycled water. {Ed Craddock -- DWR, 916-653-9493}

West Delta Water Management Program: This program includes acquisition of farm land in the western Sacramento-San Joaquin Delta for the development of wetlands and other wildlife habitat. Other benefits of the program include reduced subsidence, reduced probability of flooding, protection of Highway 160, protection of Delta water quality, and reduced impacts to fish by agricultural diversion. The Department has acquired Twitchell Island (3,600 acres), and most of Sherman Island Bradford Island (about 10,000 acres). The department intends to use some or all of the converted acreage to mitigate for future water development projects. {Dave Brown -- DWR, 916-653-6673}

Water Quality

Corps of Engineers Stockton Turning Basin Bubbler: Since the fall of 1993, the COE has installed and operated a bubbler device in the area of the Stockton Turning Basin to address low DO levels in the September to November period. When the DO is less than 5.2 at any one of eight monitoring locations, the COE in coordination with the USFWS, operates the bubbler to improve DO levels. {Ron Muller -- COE, 916-557-7837}

Drainage Implementation Program: The San Joaquin Valley Drainage Implementation Program (SJVDIP) is managed by the Department of Water Resources (DWR), U.S. Bureau of Reclamation, the Natural Resources Conservation Service, the U.S. Geological Society, the U.S. Fish and Wildlife Service, California Department of Fish and Game, California Department of Food and Agriculture, and California's State Water Resources Conservation Board. The SJVDIP's primary goal is to oversee implementation and monitoring of the recommendations made be the San Joaquin Valley Drainage Program in its 1990 report. {Manucher Alemi -- DWR, 916-327-1630}

San Joaquin Valley Drainage Program: The San Joaquin Valley is a gently sloping alluvial plane, approximately 250 miles long and an average of 45 miles wide. The valley is one of the most productive agricultural areas in the world, however most commercial crops grown in the valley require irrigation. Drainage water from this irrigation contains increased levels of salinity and trace elements, most notably selenium, that pose a risk to public health and wildlife. These substances, originally marine sediments, leached into the drainage water during irrigation. The drainage water flows through the agricultural fields into evaporation ponds, the groundwater, the San Joaquin River, and eventually the Delta. San Joaquin Valley Agricultural Drain (Water Code, § 13953.): This drain was authorized in 1960 as part of the Central Valley Project, however, it has not been built. The State Legislature proposed that the drain be constructed to discharge San Joaquin Valley drainage waters into the Delta, Suisun Bay, and the Carquinez straits. San Joaquin Valley Drainage Relief Act (Water Code, §14900 et seq.): Requires DWR to implement the plan, "A Management Plan for Agricultural Subsurface Drainage and Related Problems on the Westside San Joaquin Valley." The plan includes recommendations for a variety of water quality improvement activities. DWR is currently working to secure funding for the first project: a demonstration program where DWR, in collaboration with the U.S. Bureau of Reclamation would lease land from farmers in order to retire the land form irrigation. DWR will use this demonstration project to evaluate the effectiveness of land retirement as a technique to improve water quality. DWR anticipates that the program will begin in the fall of 1995 or early in 1996. The results of the Agricultural Drainage Program include small-scale demonstration projects; studies monitoring and evaluating the movement of selenium; creation of the Adams Avenue Drainage Research Center which treats drainage water and removes selenium, a multi-year study in conjunction with the U.S. Fish and Wildlife Service. {John Shelton -- DWR, 209-445-5137}