California Water Commission
Annual Review of State Water Project
Draft Outline

Introductory Letter from CWC Chair – 1 page

Executive Summary – 1 page

1. Background and Authority ½ page
   Provide a short summary/history of the California Water Commission and recent related legislation.

2. Overview of the State Water Project – 1-2 pages
   Description of the SWP, its components and contractors

3. The State Water Project – 2011 Annual Review – 2 pages
   - 2011 accomplishments
   - Status of construction
   - 2010-2011 Water Year Deliveries

4. Critical Issues – 1-2 pages
   - Recruitment and retention of staff, resulting in system failures and unreliable water supplies
   - Aging infrastructure
   - Bay Delta Conservation Plan Potential Effects on the SWP
   - Planning for the future: climate change, renewable energy
   - Adequate Resources to meet SWP needs

5. California Water Commission Findings – 1 page
   Include specific policy level recommendations to the Director and the Legislature regarding the identified critical issues.

Letter of Introduction by the Chair

In 2010, the Department of Water Resources (DWR) commemorated the 50th anniversary of passage of the Burns-Porter Act which authorized the planning and construction of the State Water Project (SWP). Since that time, DWR has designed, constructed, operated, maintained, and expanded the SWP to become the largest state-owned water and power system in the world and helped transform California into one of the top ten economies in the world. Today, the SWP faces ever-increasing pressures and constraints from complex regulatory requirements, litigation, state governance, aging infrastructure, drought, and increasing water demands throughout the State. The continued success of the SWP requires a strategic vision and a clear plan of action.

Executive Summary

This section to be added following Commission review and input

Background and Authority

The California Water Commission's historical role includes advising the Director of the Department of Water Resources on matters within the Department's jurisdiction, approving rules and regulations, and monitoring and reporting on the construction of the State Water Project. The Commission consists of nine members appointed by the Governor and confirmed by the Senate.

The roles and responsibilities of the California Water Commission are defined in the Water Code, sections of the Government Code, and the Civil Procedures code. Included in the Commission's responsibilities is an annual review of the construction and operation of the State Water Project (SWP), and making a report on its findings to the Department and to the Legislature, with any recommendations it may have. (WC §165)

Overview of the State Water Project

The California State Water Project is the largest state-owned and operated water storage and delivery system in the country. In 1960, California voters approved the Burns-Porter Act to finance construction of the State Water Project. The Department of Water Resources was authorized to design, construct, and operate the SWP.

The SWP is California's single most-important infrastructure system

- 24/7/365 Water & Power Utility
- Two-thirds of California's $1.7 trillion economy is generated within the SWP service area
- Serves 25 million Californians and 750,000 acres of farmland
- Operated to provide water quality benefits, flood control, recreation, and enhance fish and wildlife habitat

The SWP is the largest state-owned and -operated Water & Power Utility in the United States

- 29 plants, 23 dams, 34 storage reservoirs, 700 miles of canals and pipelines
- Largest single energy consumer in California
- 4th largest electrical power generator in the California
    - Produces about 15% of California's hydroelectric generation

The SWP annually delivers over 3 million acre-feet of water to Northern California, the Bay Area, San Joaquin Valley, Central Coast, and Southern California

- Operations, maintenance and nearly all of the capital costs are paid by the 29 SWP Contractors

The SWP delivers water to 29 contracting agencies in Northern California, San Francisco Bay area, Central Coast, San Joaquin Valley, and Southern California. These water deliveries supplement surface and groundwater resources for most of these agencies. Of the contracted water supply, 70 percent goes to urban users and 30 percent goes to agricultural users. The SWP is one of California's larger energy producers and generates approximately 60% of its own energy needs. These energy operations help stabilize the electrical grid. The project also provides flood control; operates to protect the environment; and provides recreation at SWP lakes and reservoirs.

The SWP's water supply capability depends on rainfall, snowpack, runoff, reservoir storage, pumping capacity from the Delta, and legal environmental constraints on project operations. Project water supply comes from storage at Lake Oroville and high runoff flows in the Delta. Water deliveries have ranged from 1.4 million acre-feet in dry years to 4.0 million acre-feet in wet years.

The State Water Project - 2011 Annual Review

Water Project Operations

2011 was California's first wet year since 2006. Years 2007 through 2009 reflected California's most recent drought with 2008 being a critically dry water year. Water deliveries in 2011 are expected to be just under three million acre feet or an 80% allocation. The SWP's inability to deliver 100% of requested water supply results from regulatory constraints tied to Delta exports and forced and scheduled project outages resulting from staff deficiencies and contracting delays. Table 1 reflects water year types and water deliveries in recent years.

Table 1. SWP Water Deliveries

Year	Water Year Type	SWP Allocation	SWP Deliveries (acre feet)
2006	Wet	100%	3,691,173
2007	Dry	60%	2,773,881
2008	Critical	35%	1,691,000
2009	Dry	40%	1,354,149
2010	Sac – Below Normal SJ – Above Normal	50%	2,445,830
2011	Wet	80%	NEED TO ADD #

In 2011, the SWP is estimated to generate 5,156 gigawatt hours (Gwh) of energy. During the same period of time the SWP is estimated to use 8,527 gigawatt hours of energy. Nearly 70% of this power is used by the Valley String Pumping Plants (Dos Amigos to Edmonston Pumping Plants) to lift water over 3,000 feet from the southern San Joaquin Valley over the Tehachapi Mountains and into southern California. Table 2 reflects recent year's energy generation and usage.

Table 2. SWP Power Generation and Usage

Year	Power Generated (GWh/year)	Power Used (GWh/year)
2006	7,320	9,109
2007	6,222	9,276
2008	3,925	5,700
2009	4,201	5,438
2010	4,362	7,184
2011	5,156	8,527

In the past, through many initiatives, DWR has addressed obstacles and challenges by reviewing and improving internal business practices and processes. These changes have reduced costs, increased efficiency, and streamlined processes that resulted in improved reliability of operations and water deliveries. Yet in spite of business practice improvements, the SWP has exhibited decreased reliability over the last decade.

Despite being one of California's largest utilities, the SWP has exhibited decreased reliability over the last decade because of issues directly related to barriers created by State contracting and procurement rules; severe difficulties in the retention and recruitment of skilled hydroelectric power trades and crafts personnel due to non-competitive salaries; and employee classification impediments caused by State hiring rules. As a result of these impediments, the SWP operates at a competitive disadvantage in the California energy market. DWR's ability to maintain its aging infrastructure and meet utility industry standards and requirements is hampered, with attendant increases in the cost of water deliveries to SWP customers.

More significantly, over the last decade and as a result of the recruitment and retention issues and the 2008-2010 furlough program, the capacity of individual facilities to move available water declined at an alarming rate as fewer personnel were available to work on scheduled or forced outages.

Federal Hydropower Licenses

The SWP has three hydropower licenses issued by the Federal Energy Regulatory Commission (FERC) with a combined generating capacity of over 2,400 megawatts. The licenses include the: Oroville Facilities, FERC Project No. 2100; South SWP Hydropower, FERC Project No. 2426; and Pine Flat Transmission Line, FERC Project No. 2876. The original 50-year license for the Oroville Facilities expired in January 2007. DWR initiated the relicensing process and held initial collaborative meetings in 2000. Over a thousand highly diverse stakeholders were contacted representing local interests and governments, water and resource agencies, non-governmental organizations, and Native American tribes to help develop proposed terms and conditions for a new license.

DWR filed an application for a new Oroville Facilities license in January 2005 and negotiated a Settlement Agreement with stakeholders in early 2006. The Settlement Agreement identifies over $1 billion in actions to be taken by DWR that will benefit environmental, recreational, cultural, land use, and engineering, and operations resources. In February 2007, FERC issued an annual license for continued year-to-year operation pending issuance of the new license. DWR anticipates the new Oroville Facilities license will be issued in 2012 after the National Marine Fisheries Service completes the Biological Opinion.

The original 50-year license for the South SWP Hydropower facilities will expire in January 2022. The Pre-application Document and Notice of Intent to file a license application must

be filed with FERC by January 2017. Therefore, DWR has initiated preliminary planning for relicensing the South SWP Hydropower facilities. The preliminary planning activities include coordination with DWR's co-licensee, the Los Angeles Department of Water and Power, which operates Castaic Powerplant.

Status of Construction Projects

East Branch Extension (EBX) – Phase I Improvements

The East Branch Extension is a cooperative effort among DWR, San Bernardino Valley Municipal Water District (SBVMWD) and San Gorgonio Pass Water Agency (SGPWA) to deliver SWP water to the east side of SBVMWD and SGPWA's service areas. The project conveys water from the Devil Canyon Powerplant Afterbay to Cherry Valley through a series of existing and new facilities. Construction for Phase I was completed in 2003. Construction for Phase I Improvements is scheduled for completion 2013.

The purpose of the Phase I Improvements Project is to provide additional operational flexibility, system reliability, and reduce on-peak energy demands. Phase I Improvements include the enlargement of Crafton Hills Reservoir and construction of the Yucaipa Connector Pipeline. The reservoir's operating storage will increase to 225 acre-feet and the pipeline will consist of approximately one-half mile of 42-inch diameter steel pipe. Construction of Crafton Hills Reservoir will begin early 2012 and should take about two years to complete. Construction of the Yucaipa Connector Pipeline began in 2010 and was completed this year.

South Bay Aqueduct (SBA) Enlargement

The South Bay Aqueduct (SBA) conveys water from the Sacramento - San Joaquin Delta through over 40 miles of pipelines and canals to the Zone 7, Alameda County, and Santa Clara Valley Water Districts, which in turn provide service to the cities of Livermore, Dublin, Pleasanton, San Ramon, Freemont, Newark, Union City, Milpitas, Santa Clara and San Jose. The SBA is the first conveyance facility constructed for the SWP and was designed for a capacity of 300 cubic feet per second (cfs). Recent flow tests and studies have shown that the actual capacity is 270 cfs.

The purpose of the Project is to increase the capacity of the SBA to 430 cfs to meet Zone 7 Water Agency's future needs and provide operational flexibility to reduce SWP on-peak power consumption. The Project is comprised of the following principal features:

1. Addition of four 45 cfs pumps to the South Bay Pumping Plant, including expansion of the existing plant structure, a new service bay, and a new switchyard.

2. Construction of a third (Stage 3) Brushy Creek Pipeline and surge tank parallel to the existing two barrels.
3. Construction of a 500 acre-foot reservoir (425 AF of active storage) to be served by the Stage 3 Brushy Creek Pipeline.
4. Raising the height of the canal embankments, canal lining, and canal over crossing structures and bridges along the Dyer, Livermore, and Alameda canals and at the Patterson Reservoir.
5. Modification of check structures and siphons along the Dyer, Livermore, and Alameda canals.
6. Construction of new drainage over crossing structures to eliminate drainage into the canals.

Construction began in 2007 and most of the work was completed this year. Canal modifications should conclude next year.

Edmonston Pumping Plant, Pump Replacement

The Edmonston Pumping Plant, Pump Replacement Project included replacement of the four existing four-stage Allis-Chalmers pumps with new four-stage pumps to increase efficiency at the pumping plant. These pumps are 80,000 horse power pumps that use approximately 45 percent of the total electricity used by the SWP. The original pumps, installed in 1971, were experiencing low efficiency and severe cavitation requiring higher than normal maintenance. The newly installed pumps are 2.7 percent more efficient, which has a large impact on the amount of electricity consumed. In addition, it is anticipated that the new, more efficient pumps will reduce CO^2 emissions by several million tons over a 30 year period. The contract to replace the pumps was awarded to Hitachi America, Ltd. in 2003. Installation of all four pumps was completed in October of 2011 at a cost of nearly $40 million.

Southern Field Division Headquarters Project

Construction of the new Southern Field Division (SFD) Headquarters in Pearblossom commenced this year. The new 20,000-square-foot building was designed and will be operated such that it attains a LEED (Leadership in Energy and Environmental Design) Gold rating, exceeding the requirement for new state buildings. The building will include state of the art energy and water saving features such as ground source heat pumps using the ground's thermal mass to provide heating and cooling, sophisticated thermostat controls that better identify heating and cooling needs, low flow plumbing fixtures, and recycled building products. The building will combine staff from several DWR organizations to more effectively address safety, Federal Energy Regulatory Commission relicensing efforts, construction management of projects in SFD, and other operations, maintenance, regulatory, and compliance activities in the southern region of California. The project is expected to be completed in 2012.

Delta Habit Conservation and Conveyance Program (DHCCP)

The Bay Delta Conservation Plan (BDCP) is being prepared by a group of local water agencies, environmental and conservation organizations, state and federal agencies, and other interest groups. The BDCP is being developed in compliance with the Federal Endangered Species Act (ESA) and the California Natural Communities Conservation Planning Act (NCCPA). When complete, the BDCP will provide the basis for the issuance of endangered species permits for the operation of the state and federal water projects. The plan would be implemented over the next 50 years.

The heart of the BDCP is a long-term conservation strategy that sets forth actions needed for a healthy Delta. The Bay Delta Conservation Plan is designed to achieve the co-equal goals of providing for the conservation and management of aquatic and terrestrial species, including the restoration and enhancement of ecological functions in the Delta, and improving current water supplies and the reliability of delivery of water supplies conveyed through the State Water Project (SWP) and the Central Valley Project (CVP).

Formed in 2008, the Delta Habitat Conservation and Conveyance Program (DHCCP) was established in DWR to assess potential habitat restoration and water conveyance options.
DHCCP will:

- Analyze BDCP proposed actions and alternatives to those actions through a formal EIR/EIS process.
- Analyze options and consider areas of concern presented by the public during the EIR/EIS process.
- Develop engineering options for habitat restoration, other stressors, and water conveyance.

DHCCP will conduct an environmental review of the BDCP. The lead agencies conducting the joint environmental review are DWR for California, and USBR, FWS, and NOAA for the federal government.

Critical Issues

The Department of Water Resources (DWR) operates the SWP as a state-owned utility by providing water to 25 million Californians and engaging in the sales and purchases of large amounts of energy (several hundred million dollars per year). Despite being one of California's largest utilities, the SWP has exhibited decreased reliability over the last decade because of issues directly related to: barriers created by State contracting and procurement rules; severe decreases in the retention and recruitment of skilled hydroelectric power trades and crafts personnel due to non-competitive salaries; and

employee classification impediments caused by State hiring rules. As a result, the SWP struggles to maintain its complex and aging infrastructure, meet the continually evolving utility industry standards and requirements, and competes at a competitive disadvantage in the deregulated California energy market. These factors translate into increased costs for water delivery to SWP customers.

DWR recognizes the significance of optimal and cost effective operation of the SWP. Through many initiatives, DWR has addressed obstacles and challenges in the past by reviewing and improving internal business practices and processes. These changes have reduced costs, increased efficiency, and streamlined processes that resulted in improved reliability of operations and water deliveries. Yet in spite of business practices improvements, the SWP has exhibited decreased reliability over the last decade.

More significantly, over the last decade and as a result of the recruitment and retention issues and the 2008-2010 furlough program, the capacity of individual facilities to move available water declined at an alarming rate as fewer personnel were available to work on scheduled or forced outages. Non-competitive salaries, particularly in the skilled hydroelectric power utility trades and crafts classifications, are responsible for the exodus of experienced personnel in these critical Operations and Maintenance classifications. Likewise, non-competitive salaries, furloughs, hiring freezes, and vacancy sweeps create administrative barriers to recruitment of experienced personnel critical to the safe, reliable, and cost-effective operation of the SWP.

Specific impacts to the SWP resulting from administrative issues include:

- Decreased reliability of water supply and increased forced outages due to staff shortages, inexperience, and lack of maintenance. In December 2010, $25 million of water was not exported due to equipment constraints.
- Increased energy costs to operate the project and loss of energy revenue. Energy costs have gone up $50 million per year and are increasing because of outages.
- Increased operation costs due to contracting delays. Maintenance and repairs to the project are taking more than twice as long to complete.
- Risk of non-compliance with regulations resulting in potential fines of $1 million per day per violation.

It is estimated that last year alone, the disadvantages that State rules put on DWR and the SWP cost nearly $100 million.

The risk to the SWP is real – water contractors around California pay fees to run the system. These costs are passed onto their ratepayers – California citizens, businesses, and agriculture. Currently, annual delivery costs exceed $1 billion. Pressures to make

the system more efficient are building. In addition, there continues to be ongoing conversations about moving the State Water Project into a separate, independent state-owned water authority that is more capable of meeting its customers' needs. These public conversations are happening at the same time the State is moving forward with the Bay Delta Conversation Plan (BDCP) for habitat restoration and water reliability. This will raise serious concerns about the State's ability to complete and operate that project.

In addition to struggling with administrative and operational challenges, the SWP must prepare for a changing future and aging infrastructure in much of its system. Seismic risks and vulnerabilities also threaten the reliability of the SWP that will require significant investment to adequately address. Climate change has the potential to impact many SWP facilities and renewable energy sources can improve the efficiency and environmental responsibility of SWP operations.

California Water Commission Findings

Over the past nine years, DWR has worked diligently to address administrative issues to be as nimble and proactive as possible. Unfortunately, due to both administrative and operational challenges it is becoming more and more difficult to operate one of the largest utilities in the world. Safety and reliability of the SWP have been threatened, cost increases have occurred, and SWP customers have grown increasingly dissatisfied. DWR must find ways to resolve these critical issues to ensure a reliable water supply for California.

The California Water Commission supports a two-phased approach for dealing with the remaining administrative issues. CWC supports DWR's recent action to hire a consultant to review and update the list of critical issues facing administration of the SWP, identify and evaluate alternatives to resolve the critical issues, recommend a course of action, and propose a plan for implementation. The second-phase would include working with the Administration and other appropriate agencies to finalize and execute DWR's approved implementation plan.

The range of alternatives should include, but not be limited to:

- Immediate actions to address continuing loss of personnel from key classifications that can affect safety and reliability of SWP operation;

- Evaluation of existing activities and regulations governing DWR personnel and contract transactions, and;

- Evaluation of a new governance structure for the SWP that will provide long-term sustainable solutions to the lingering issues.

The Department should work diligently with the Administration to review and address the administrative issues facing the SWP and develop and implement a course of action to provide long term solutions to these problems.