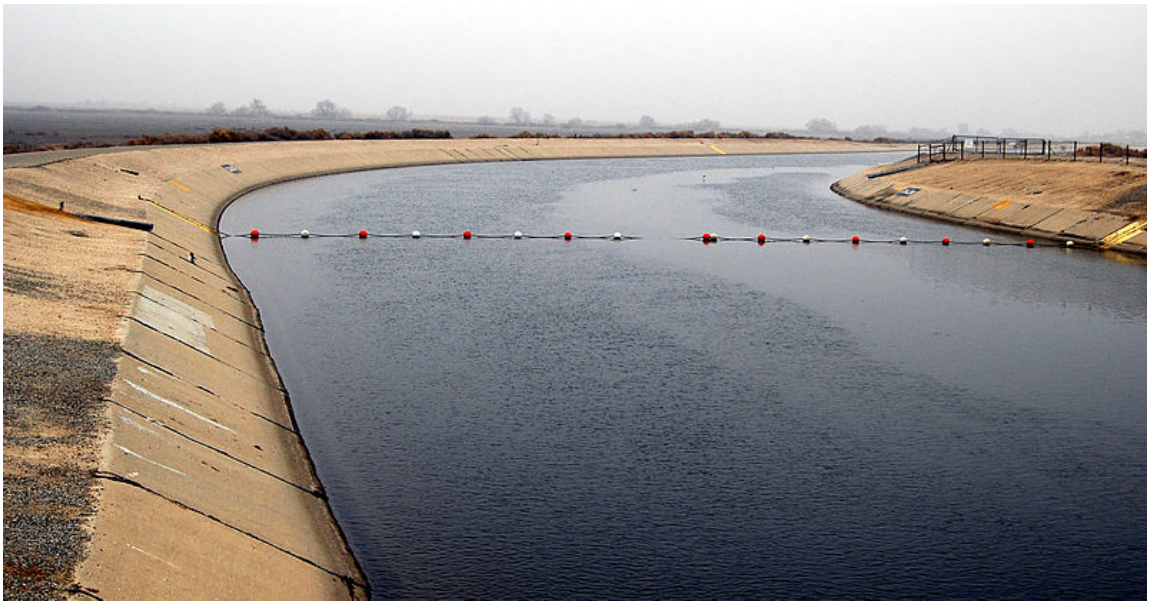
State Water Project Water Supply

Why the Department of Water Resources Cannot Meet SWP Contract Obligations



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Summary

The Department of Water Resources and the State Water Project Contractors have claimed for years that environmental protection laws have stopped DWR from delivering the full Table A allocations of the State Water Project. But an examination of early reports by the Department of Water Resources and the State Water Board shows that this representation is mostly false. At the time of the signing of the State Water Project contracts, the Department of Water Resources knew that the state had water rights to supply only about half the amount in the Table A contracts. In addition, the permits for DWR to divert water from the Feather River and water from the Delta were conflict with 1927 applications assigned by the state to the Bureau of Reclamation. These applications assumed diversion of essentially all the unappropriated flows in the Delta and the Sacramento River watersheds. In particular, the applications assumed the full flow of the Feather River would be available downstream for diversion by the Bureau. The resulting water supply conflicts have never been fully resolved.

At the time the State Water Project contracts were written, the Department of Water Resources knew that it would need to significantly augment flows on the Sacramento River from sources outside the Sacramento River watershed to fulfill the Table A contracts. But plans by DWR to obtain additional supplies from North Coast Rivers, including the Trinity, Eel, Van Duzen, Mad, and Klamath Rivers were in fundamental conflict with prior water rights, including Trinity diversion applications assigned to the Bureau of Reclamation in 1957, rights of local water users, and the fishing rights of California Indian tribes.

This report documents the initial planning for the Feather River and Sacramento-San Joaquin Delta Diversion Project, that became the State Water Project, and how and why the California Department of Water Resources was unable to obtain the supplemental upstream supplies needed to reliably fulfill the initial Table A amounts in the State Water Project contracts. It also documents that the needs of the Sacramento Valley and the Delta as areas of origin have never been adequately addressed.

Why the State Water Project never had adequate water supplies

When the State Water Project was planned between 1951 and 1960, it was understood that Oroville dam and flows in the Delta would only provide about half of the contracted amounts for the State Water Project.[1] Planners hoped that additional facilities would eventually augment flows on the Sacramento River to provide full allocations. They looked to North Coast rivers, including the Trinity, Klamath, Eel, Van Duzen and Mad Rivers to provide augmentation of Sacramento flows.[2] However, between the time that the Feather River Project was introduced in 1951, and the authorization of the Burns-Porter Act in 1960, acts of Congress and the Oregon

[1] Governmental History Documentation Project, Goodwin Knight / Edmund Brown, Sr., Era: California Water Issues, 1950-1966, William E. Warne, Administration of the Department of Water Resources 1961-66, p. 104 Available at http://archive.org/details/califwatertapere00chalrich

[2] Department of Water Resources, Water Progress in California, 1965.

and California legislature severely limited diversion rights by the State of California on the Trinity and Klamath Rivers.

Trinity River diversions were included in the original plans for the Feather River and Sacramento-San Joaquin Delta Project when it was introduced in 1951. However, by the time the California State Legislature authorized funds for the North Coastal Area Investigation in 1956, Congress had authorized the Trinity River Division of the Bureau of Reclamation. In 1952, the year after the Feather River Project was introduced, the Bureau of Reclamation submitted a proposal to construct the Trinity dam. Westlands Water District was also formed. In 1953, Congressman Clair Engle introduced a bill to authorize the construction of the dam and the creation of the Trinity River Division of the Bureau of Reclamation. Westlands contacted Engle, and Engle agreed that some of the water would go to provide contracts for Westlands in exchange for promoting the project. In December 1954, the state engineer, A. D. Edmonston, objected that the Trinity project would interfere with plans for the Feather River Project. Westlands lobbied the governor and the state Senate, insisting that the San Joaquin Valley needed the water first.[3] The Trinity River Division Act was passed by Congress in 1955, and signed by President Eisenhower. In 1957 the Department of Water Resources assigned the permit for Trinity River diversion to the Bureau of Reclamation. Congress passed the San Luis Act in 1960, authorizing provision of new water supplies to approximately 500,000 acres of land. Trinity dam was completed in 1963 and began diverting 75- 90% of the river flow at Lewiston.[4] A few months later the Bureau signed new contracts with Westlands and other San Luis Unit water districts.

Trinity Dam shortly after completion in 1963.
Source: Klamath River Information System[5]

DWR's North Coastal Area Investigation also found that plans to divert water from the Klamath River faced huge obstacles. Early speculation about diversions from the Klamath did not take into account prior rights by local farmers and the Bureau of Reclamation in the upper Klamath

[3] Sayles, Stephen Paul, "Clair Engle and the Politics of California Reclamation, 1943-1960", Ph.D. dissertation, U. of New Mexico (1978), as quoted by Dane J. Durham in "How the Trinity Lost It's Water," Available at http://www.trinitycounty.org/Departments/Planning/How%20the%20Trinity%20River%20Lost%20Its%20Water%20by%20Dane%20Durham.pdf

[4] Dane J. Durham, "How the Trinity Lost It's Water" Ibid.

[5] Available at krisweb.org

watershed. In 1953 the States of California and Oregon negotiated an agreement on diversions in the Upper Klamath watershed, which barred diversion outside of the Upper Klamath River Basin. The Klamath River Compact was ratified in 1957. The 1964 report for the North Coastal Area Investigation only considered a plan to build a dam on the lower Klamath River, and indicated it was the lowest priority because of impacts on Klamath River salmon runs.[6] The plan for a dam on the lower river would have also run afoul of fishing rights of the Yurok tribe.[7]

Agriculture and Industry on Upper Klamath River
Source: Klamath Riverkeeper

State Water Project Contracts Listed Table A Allocations as Provisional

When the Table A allocations were written into the State Water Project contracts between 1960 and 1962, it was understood that the state had assigned all the permits on the Sacramento, San Joaquin, and Trinity Rivers to the U.S Bureau of Reclamation. The SWP contracts were written with the explicit caveat that the estimate of a total of 4.23 million acre feet of project yield was an initial estimate only, and subject to revision:

> "the dependable annual supply of project water to be made available, estimated to be 4,230,000 acre-feet per year, said amount to be determined by the State on the basis of coordinated operation studies of initial project conservation facilities and additional project conservation facilities , which studies shall be based upon. …

[6] California Department of Water Resources, North Coastal Area Investigation, 1964, p. 11
[7] Hoopa Valley Tribal Fisheries, History of the Trinity River 50,000 acre-feet, Available at http://www.hoopafisheries.org/13501.html

> … Agreements now in effect or as hereafter amended or supplemented between the State and the United States and others regarding the diversion or utilization of waters of the Delta or Streams tributary thereto. "[8]

Proposed Project on Eel River

The Department of Water Resource's remaining hope to augment Sacramento River supplies was on the Eel River. After seven years, the North Coastal Area Investigation found that the most realistic prospects for additional State Water Project water supply were diversion dams on the Eel, Van Duzen, and Mad Rivers, which had much more limited potential yield than the Trinity River.[9] The Department of Water Resources completed plans for the Dos Rios Dam, a reservoir on the upper Eel River with an initial estimated yield of 750,000 to 800,000 acre-feet per year. However, the yield studies assumed diversion of 80% of the river flow, and did not sufficiently account for prior rights of the Potter Valley Project, and future needs in Mendocino and Sonoma Counties. The Potter Valley Project diversions varied between 70,000 af/year and 140,000 af/year at the time of the study, and grew to an average of 160,000 af/year from the Upper Eel River from 1992 to 2004. The Potter Valley Project diversions were reduced in 2004 to 90,000 cfs/year to protect endangered salmon runs. [10]

North End of Potter Valley CA, 1991
Source: G. Donald Bain, Geo-Images Project, UC Berkeley [11]

In 1967, the State Water Board held a hearing to consider issuing diversion permits for the State Water Project. A joint water rights investigation by the Bureau of Reclamation and the Department of Water Resources showed that there was likely not enough water in the Delta for the proposed State Water Project diversions. The Department of Water Resources produced

[8] California Department of Water Resources, Bulletin 141, 1965, vol II: State Water Project Contracts, Article 1, subsection (k), p. 361.
[9] North Coastal Area Investigation, op. cit.
[10] North Coastal Area Investigation, op. cit.
[11] Pictures available at http://GeoImages.Berkeley.EDU

studies showing that with an extra 900,000 af/year of water from the Dos Rios Reservoir, that there would be adequate supply. The State Water Board granted the diversion permits in the Delta based on these studies.[12]

Proposed Project on the Eel River Fails

At the time the Department of Water Resources presented its yield studies to the State Water Resources Control Board in 1967, the construction of the proposed dam on the Eel River had become hugely controversial because it was going to flood 18,000 acres in Round Valley, displacing 1,050 people in the community of Covelo and 350 residents of the Round Valley Indian Reservation. [13] The initial North Coast study proposed two dams, one above and one below Round Valley, but this option would only have yielded 660,000 acre feet per year. The Department of Water Resources decided to go with the plan to inundate Round Valley. Unfortunately for the Departments plans, one of the ranchers in Round Valley had powerful political connections, and got Governor Reagan to intervene in 1968 to mandate the development of alternatives. In 1972, the state legislature designated the Eel River as a Wild and Scenic River, as well as portions of the Klamath, Smith, and Trinity rivers.[14] The Eel and undeveloped portions of the Trinity Rivers were designated federal Wild and Scenic Rivers in 1981, and remaining North Coast plans were shelved. In the intervening 30 years, hydrologic studies by the Department of Water Resources have continued to show that the "dependable annual supply of [State Water] project water" is about half the contracted Table A amounts.

Fundamental Conflicts Over SWP Diversion Applications

Conflicts between the State Water Project and prior water rights holders date back to the original State Water Control Board Hearings over the applications by the State Water Project to divert water in the Delta. The initial study for the Feather River Project estimated that releases from Oroville Dam and diversions from the Delta would provide a dependable supply of about 2,845,000 acre feet per year. [15] However, this estimate was in conflict with yield studies used by the State Water Board in granting permits for diversions of up to 9,000 cfs by the Bureau of Reclamation in the Sacramento River and Delta, which included the unimpaired flow of the Feather River, totaling more than 3 million acre feet per year. [16] The state applications for

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[12] State Water Resources Control Board, Decision 1275.
[13] California Department of Water Resources, California Water Plan, 1970.
[14] California Department of Water Resources, Bulletin 200, California State Water Project v 1. History, Planning, and Early Progress, p. 79.
[15] California State Water Resources Board, Report on Feasibility of the Feather River Project and Sacramento-San Joaquin Delta Diversion Projects Proposed as Features of the California Water Plan, May 1951, as quoted in DWR Bulletin 200, v. 1, p. 53.
[16] State of California, State Water Rights Board, Opinion By Board Member W. P. Rowe Concurring In Part With, And Dissenting In Part From Decision D 990, p. 58. Available at http://www.swrcb.ca.gov/waterrights/board_decisions/adopted_orders/orders/1961/wro61_wrd990.pdf

direct diversion from the Delta also contained a clause reserving water sufficient to supply the needs of areas of origin, to conform with protections in the state constitution and the Watershed Protection Act.[17]

The first attempt to resolve the conflict between the Bureau of Reclamation and state permits, and area of origin needs was at the hearing for Water Rights Decision 990 in 1960. The Department of Water Resources and the Bureau of Reclamation requested that the hearing be recessed for a month while they hashed out the first Coordinated Operating Agreement. In Article 12, the parties agreed to divide unappropriated water in the Delta in the ratio of basis of total diversions under applications permits, which were then 8,300,000 acre feet per year for the Bureau, to 5,260,000 acre feet per year for the Department of Water Resources, and to similarly allocate any shortages.[18] When asked about salinity control at the hearing, the director of the Department of Water Resources stated that "this phase of the problem would have to be worked out when the operating agreement between the United States and the State was negotiated." [19]

The Board decided that "the variances between the Bureau's Central Valley Project and the Department's Feather River Project of 1951 and the plans presented at the hearing, involving no more water than was available in 1951 (except for the Trinity River diversion) poses a problem that cannot be solved by the Board. All it can do is maintain continuing jurisdiction until the Department receives its permits for the State Water Plan and has arrived at an operational agreement with the Bureau as proposed in the testimony of the Director of the Department."[20]

In 1967, the State Water Board held hearings on granting the permits for the State Water Project. Over 100 protests were received from respondents in the Delta and the Sacramento-San Joaquin Valley.

In 1978, the State Water Resources Control Board issued D 1485, which set maximum chloride standards for intakes for urban uses in the Delta, including the Contra Costa Water District, the City of Antioch, and the City of Vallejo, maximum salinity levels in the Western and Interior Delta, and minimum Delta outflows for fish.[21] It was understood that these standards would significantly constrain exports by the Bureau of Reclamation and the State Water Project.

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[17] California Department of Water Resources, Bulletin 59-2, Investigation of the Upper Feather River Basin Development, October 1960.

[18] State Water Board, Decision 990, p. 59 Available at http://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/decisions/d0950_d0999/wrd990.pdf

[19] Ibid., p. 60

[20] Ibid., p. 62

[21] State Water Board, Decision 1485, August 1978. Available at http://www.waterrights.ca.gov/hearings/decisions/WRD1485.PDF

1 City of Antioch, CA

Dependable Annual Yield Estimates Projected to Decrease as a Result of Prior Rights

Estimates of the dependable yield of the State Water Project have decreased as understanding of the needs for flows to maintain fish and wildlife in the Delta have improved, and with attempts to resolve conflicts with prior permits for diversions by the Bureau of Reclamation, and with area of origin rights in the Sacramento Delta.

In 1981, the Department of Water Resources estimated that the dependable annual yield of the State Water Project was 2.3 million acre feet per year, and projected to go down to 1.6 to 1.8 million acre feet per year by 2000, "as a result of increased use in areas of origin, maturity of contractual obligations of the Central Valley Project, and other prior rights."[22] The average deliveries for the State Water Project between 1990 and 2000 were in line with the 1981 projections -- about 1.86 million acre feet per year. In 1987, the Department of Water Resources estimated that the state needed to acquire 250,000 to 500,000 af/year of CVP water to firm up State Water Project supplies, as well as develop the Kern Water Bank to store wet year flows and provide another 140,000 af/year towards meeting Table A allocations.[23]

The Four Pumps Agreement

In 1986, the Department of Water Resources entered into an agreement with the Department of Fish and Game and the U.S. Army Corps of Engineers to install four additional pumps at the Banks pumping plant, increasing the pumping capacity to 10,300 cfs. The Department of Water Resources indicated that increasing the operations of the pumps would proceed in two phases:

> In the first phase, covered in the current EIR, the final four pumps will be installed but the plant will not pump at more than the average historical pumping rate (pursuant to criteria

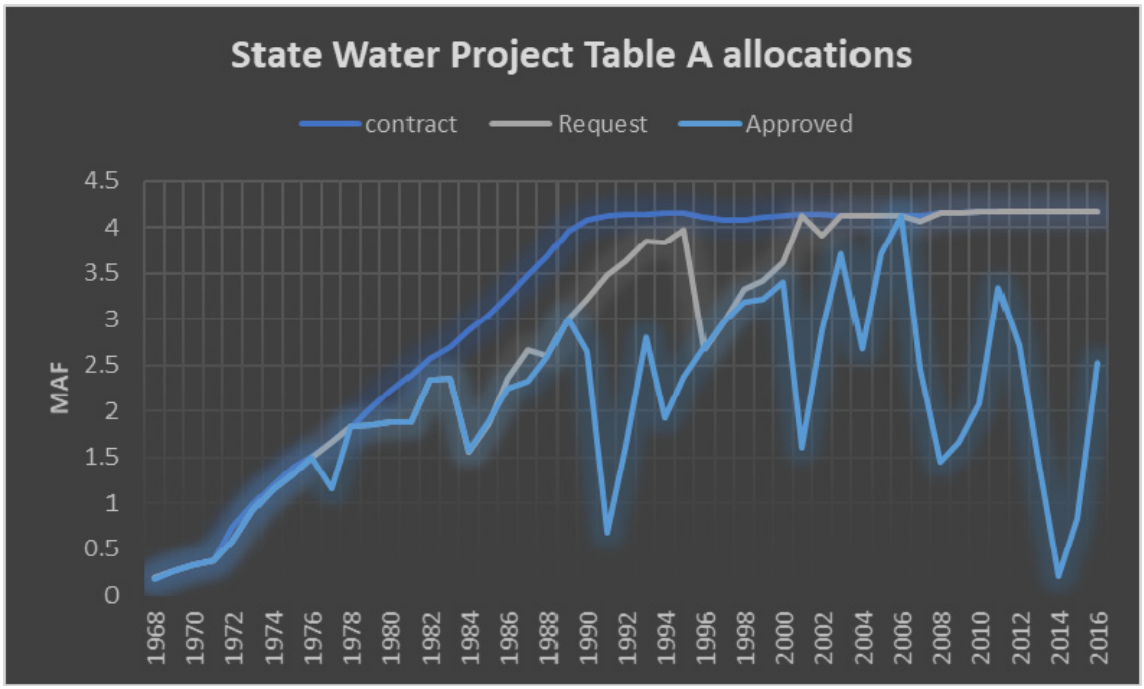
[22] California Department of Water Resources, State Water Project – Status of Water Conservation and Water Supply Augmentation Plans, November 1981

[23] California Department of Water Resources, Bulletin 160-87, California Water: Looking to the Future, p.48

established by the U.S. Army Corps of Engineers in its Public Notice 5802A, Amended, dated October 1981.) …

For the second phase, DWR will do the necessary environmental review and documentation to obtain a Corps of Engineers' permit to divert and pump more in the winter months for filling off- stream storage reservoirs and ground water basins south of the Delta.[24]

The four pumps were brought online in 1992. Maximum deliveries increased, but deliveries also became much less reliable in dry years. The graph below shows the increase in requested and approved Table A allocations.



Data Source: SWP Operations and Control Office

The Monterey Agreements

In 1994, as part of the Monterey Agreements, the State Water Project gave up the Kern Water Bank in exchange for the retirement of 45,000 af/year of State Water Project Table A contracts. This trade cost the State Water Project storage that could have been used increase reliability by 140,000 af / year, in exchange for the retirement of contracts that represented average deliveries of 20,000-25,000 af/year. The trading of the Kern Water Bank, and the agreement to sell the Article 21 surplus flows to the water agencies participating in the Kern Water Bank for

[24] Department of Water Resources, Bulletin 132-85. Available at http://www.water.ca.gov/swpao/docs/bulletins/bulletin132/Bulletin132-85.pdf

only the cost of the pumping, fundamentally limited the ability of the Department of Water Resources to use flows in very wet years and storage south of the Delta to firm up the minimum deliveries of State Water Project Table A allocations.

The State Water Project Contracts had included a provision that the Department of Water Resources' maximum annual entitlement, together with the maximum entitlements of all other contractors, should "aggregate no more than the minimum project yield as defined herein" (Article 16(a).) However, this provision was never acted upon. Instead, at the same time the Kern Water Bank was traded away, the Department of Water Resources agreed to eliminate provisions in the State Water Project that provided for proportional reductions in Table A entitlements, in the event of permanent shortages.

This provision, Article 18(b), stated:

> "In the event that the State is unable to construct sufficient additional conservation facilities to prevent a reduction in the minimum project yield, or if for any other reason there is a reduction in the minimum project yield, which…threatens a permanent shortage in the supply of project water to be made available to the contractors:
>
> > (1) The annual entitlements and the maximum annual entitlements of all contractors…. shall, by amendment of Table A of this contract, be reduced proportionately by the State to the extent necessary so that the sum of the revised maximum annual entitlements of all contractors will then equal such reduced minimum project yield…. "[25]

At the same time, the water export agencies began requesting their full Table A amounts every year, and began blaming the delivery of less than the full allocations on state and federal environmental protections, including the Endangered Species Act.

Lake Oroville and Feather River, 2009
Source: Department of Water Resources

[25] State Water Project Contracts

The Endangered Species Act

The increase in State Water Project exports after Decision 1641 in 2000 was supposed to be mitigated by the purchase of 380,000 af/year of water for the Environmental Water Account. But DWR never fully funded the Environmental Water Account, and let water export contractors sell exported water back to the EWA. This resulted in an arbitrage game with surplus water. [26] The EWA was discontinued when public bond funding ran out.

In 2007 and 2009, the National Marine Fisheries Service and US Fish and Wildlife issued biological opinions that required a reduction in export rates to prevent Delta Smelt and Winter and Spring Run Chinook salmon from going extinct. The reduction to State Water Project Table A allocations was estimated at 246,000 acre feet a year in the 2013 Delivery Reliability Report. Average Table A allocations were estimated at 2,553,000 acre feet a year.[27]

[26] Mike Taugher, Contra Costa Times, "Pumping water and cash from Delta," May 23, 2009, and "Gaming the Water System, May 25, 2009." Available at http://www.contracostatimes.com/news/ci_12439808 and http://www.contracostatimes.com/top-stories/ci_12443070.

[27] State Water Project 2013 Delivery Reliability Report, p. 30. Available at http://www.water.ca.gov/news/newsreleases/2013/121013drr2013_report.pdf