

CALFED

**TECHNICAL REPORT
AFFECTED ENVIRONMENT**

REGIONAL ECONOMICS

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LIST OF ACRONYMS

CALFED	CALFED Bay-Delta Program
Census	U.S. Department of Commerce Bureau of the Census
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
D	Decision
EDD	California Employment Development Department
ERAF	Education Reinvestment Augmentation Fund
IMPLAN	Impact Analysis for Planning
M&I	municipal and industrial
MWD	Metropolitan Water District
PEIS	Programmatic Environmental Impact Statement
SWP	State Water Project
SWRCB	State Water Resources Control Board

REGIONAL ECONOMICS

INTRODUCTION

This technical report reviews the regional economies that could be affected by implementation of the CALFED Bay-Delta Program (CALFED). Implementation of CALFED program elements could cause changes in land uses and in the use, price, and availability of water. These changes would affect production, consumption, and investment decisions in the agricultural, fishing and recreation, municipal and industrial (M&I), and hydropower sectors. In turn, this would change the demand for goods and services, thereby directly and indirectly impacting employment, income generation, and public finance.

Agriculture, resource extraction (timber harvesting and mining), animal husbandry, and recreation are dominant industries for much of the upper watershed study areas, influencing employment rates, income generation, local government finances, and regional economic output. These industries are located on both private and public lands, as administered by the U.S. Forest Service, Bureau of Land Management, and state resource agencies.

Several assessment variables were identified to provide ways of measuring and comparing the potential effects of the proposed and alternative CALFED actions on regional economics. The key assessment variables are:

- Employment,
- Personal income, and
- Public finance.

SOURCES OF INFORMATION

For the Delta Region, data for the counties of Sacramento, Contra Costa, San Joaquin, Solano and Yolo are included. Sources of data include the U.S. Department of Commerce Bureau of the Census (Census), the California Department of Finance, and the California Employment Development Department (EDD).

The description also uses data from regional economic models that were developed using Impact Analysis for Planning (IMPLAN) software. Because IMPLAN data are available only by county, methods were developed to split counties into the Delta Region and non-Delta components. IMPLAN is based on many secondary sources of data at the federal, state, and county levels. The IMPLAN database and other sources, such as EDD estimates, were compared and validated prior to usage of the models for regional analysis.

The 1991 IMPLAN database was the most current database available at the time that models were developed for the Programmatic Environmental Impact Statement/Environmental Impact Report analysis. The baseline data summarizes the final demand, total industry output, and employment for the major industries in each of the study regions.

ENVIRONMENTAL SETTING

Regulatory Context

Water rights define the terms and conditions of M&I water use. Water rights are a right of use, not ownership, and are subject to changing regulations that condition the timing, quantity,

place, and type of use. Water diversions from the Delta are allowed under riparian or appropriative water rights. Riparian landowners have a right to divert a portion of the natural flow for reasonable and beneficial use on the owner's land within the watershed.

In case of water shortage, users must share in the available supply according to each owner's reasonable requirements and uses.

Appropriative water rights are based on a history of beneficial use rather than location adjacent to the water supply. Appropriative rights established after 1914 require a permit from the State Water Resources Control Board (SWRCB).

Diversion and storage by the Central Valley Project (CVP) are allowed under appropriative rights. Permits for the CVP were first issued in 1958 (Decision [D]-893), and permits for the State Water Project (SWP) were issued in 1967 (D-1275 and D-1291). The Delta Protection Act of 1959 declared that the maintenance of an adequate water supply for urban use and for export to water-deficient areas, among other uses, was necessary. D-1485, adopted by SWRCB in 1978, required the SWP and CVP to meet Delta water quality standards. D-1630 was proposed in 1992 but withdrawn, and Delta export operations have been guided recently by D-1485; the Endangered Species Act; the Bay-Delta Agreement of December 15, 1994; the Coordinated Operations Agreement between the SWP and CVP; and the Central Valley Project Improvement Act (CVPIA) of 1992.

Delta Region

HISTORICAL PERSPECTIVE

From 1940 to 1992, the population of California grew at a 2.9% compound annual rate, while that of the U.S. grew at a 1.3% rate (California Department of Finance 1995). Growth in California was stimulated by such factors as the "baby boom" following World War II,

expanded job opportunities in electronics and defense-related sectors, and climate and other quality of life considerations in California.

From 1940 to 1985, the rate of growth of the population of the Delta Region counties exceeded that for the state as a whole, and the same was true for all counties among the Delta Region counties except San Joaquin County (Table 1). Contra Costa County had the largest increase (611%), whereas San Joaquin County had the smallest (211%). The average annual growth rate in the Delta Region counties was approximately 4%.

In 1940, agriculture was the largest single employment sector in the Delta Region. At that time, agricultural production provided 21% of total household employment in the Delta Region counties, followed by manufacturing (19%), trade (18%), and services (17%) (Table 2). By 1985, agricultural production provided only 3% of total employment in the area, and manufacturing employment decreased to 9%. Conversely, employment in the trade sector increased to 24%, services increased to 21%, and government increased to 25%. Recreation-related employment typically is concentrated in businesses that form a portion of the retail and services sectors. By 1985, the largest proportions of employment in the Delta Region counties had shifted to the government, trade, and services sectors.

Total personal income in the Delta Region counties increased from 1970 to 1985 (Table 3). Income associated with the services and retail sectors also increased steadily during that period. The contribution of regional farm income as a portion of total personal income in the Delta Region counties has decreased since 1980 (Table 3).

Year	County					Delta Region Counties	California
	Contra Costa	Sacramento	San Joaquin	Solano	Yolo		
1940	100	170	134	49	27	480	6,907
1950	298	277	200	104	40	919	10,586
1960	409	503	250	135	66	1,363	15,717
1970	558	631	290	170	92	1,741	19,953
1980	656	783	347	235	113	2,134	23,668
1985	711	891	417	273	123	2,415	26,402
Percent change (1940-1985)	611%	424%	211%	457%	355%	403%	282%
Average annual growth (1940-1985)	5%	4%	3%	4%	3%	4%	3%

NOTE:
The Delta Region counties population is the sum of total population data for the five counties.

SOURCES:
Census 1942, 1952, 1962, 1972, and 1982; California Department of Finance 1986.

Table 1. Historical Population Trends in the Delta Region Counties, 1940 to 1985 (thousands)

Employment by Industry	Percentage of Population	
	1940	1985
Agriculture	21	3
Mining	1	1
Construction	5	6
Manufacturing	19	9
Transportation, communications, and utilities	8	5
Trade ^a	18	24
Finance, insurance, and real estate	3	6
Services	17	21
Government	8	25
Total	100	100

NOTES:
The Delta Region counties include total employment for Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties.
Data for 1940 are taken from the 1940 U.S. Census and represent employment by residents of a particular county. California Employment Development Department data for 1985 represent employment by industries located within a particular county. Although the data are not strictly comparable in unit terms, they are generally comparable when expressed as a percentage of the total.
^a Includes both wholesale and retail trade.

SOURCES:
Census 1942, EDD 1996.

Table 2. Employment Composition for the Delta Region Counties (1940 to 1985)

Year	Total Income	Farm Income ^a	Retail Income ^a	Services Income ^a	Range of Total Income ^b
1970	22,000	600 (3%)	2,000 (9%)	2,000 (9%)	1,000-8,000
1980	32,000	800 (3%)	2,000 (6%)	4,000 (13%)	2,000-12,000
1985	38,000	400 (1%)	3,000 (8%)	5,000 (13%)	2,000-14,000

NOTES:

Personal income for all years is expressed in 1994 dollars. The Delta Region counties include Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties.

^a Percentage indicates percent contribution to total personal income.

^b Range represents the highest and lowest contributions to total personal income for the Delta Region counties. For each year, Yolo County contributed the lowest amount and Contra Costa County contributed the highest.

SOURCE:
California Department of Finance 1996.

Table 3. Personal Income for the Farm, Retail, and Services Sectors in the Delta Region Counties, 1970 to 1985 (millions of dollars)

CURRENT RESOURCE CONDITIONS

This section describes regional population, employment, income, and fiscal data for the period from 1986 to 1995. Overall, the rural Delta economy is largely dependent on agriculture, travel, and tourism for its economic base.

Population growth in the Delta Region counties and in individual counties from 1986 to 1995 grew at 24%, similar to population growth in the State as a whole (Table 4). During this period, population growth was concentrated in urban centers, including Sacramento in Sacramento County; Stockton, Lathrop, and Tracy in San Joaquin County; Brentwood, Antioch, and Pittsburg in Contra Costa County; and Fairfield, Vacaville, Rio Vista, and Suisun in Solano County (Brady and Associates 1994). As of the 1990 U.S. Census, Caucasians continued to compose the largest proportion of the population, although the relative proportion of all other ethnic groups continued to rise (Table 5).

As of the 1990 U.S. Census, median family incomes ranged from \$35,000 in San Joaquin County to \$52,000 in Contra Costa County. Poverty rates in the individual counties varied widely, from 7% in Contra Costa County to 17% in Yolo County.

EMPLOYMENT

The composition of employment in the Delta Region counties has remained virtually unchanged since 1986. Services, government, and trade accounted for approximately 70% of total employment in the Delta Region counties in 1995 (Table 6). Agricultural employment also remained unchanged at an estimated 2% of total employment.

Recreation-related employment for businesses is classified in the retail and services sectors. These businesses typically include marinas, restaurants, bars, hotels and motels, and providers of recreational goods and services. Regional employment opportunities directly associated with Delta recreation and agriculture include waterfowl hunting clubs, marina

Year	County					Delta Region Counties ^a	California
	Contra Costa	Sacramento	San Joaquin	Solano	Yolo		
1986	726	918	434	285	125	2,488	27,052
1987	741	951	449	298	128	2,567	27,717
1988	761	982	461	310	133	2,647	28,393
1989	785	1,012	472	325	137	2,731	29,142
1990	810	1,051	484	346	143	2,834	29,976
1991	827	1,087	498	358	146	2,916	30,646
1992	846	1,112	510	367	149	2,984	31,300
1993	855	1,121	515	370	149	3,010	31,552
1994	869	1,130	521	374	151	3,045	31,961
1995	883	1,149	531	378	154	3,095	32,231
Percent change (1986-1995)	22%	25%	22%	33%	23%	24%	19%
Average annual growth (1986-1995)	2%	2%	2%	3%	2%	2%	2%

NOTE:

^a The Delta Region counties population is the sum of total population data for the five counties.

SOURCES:
California Department of Finance 1993, 1994, and 1995.

Table 4. Population Trends in the Delta Region Counties by County, 1986 to 1995 (thousands)

Characteristic	1990 Data
Total population ^a	2,900,000
Ethnicity ^b	
Caucasian	67%
African American	9%
Hispanic	13%
Native American	0.8%
Asian	10%
Other	0.2%
Median family income ^c	\$35,000-\$52,000
Poverty rate ^d	7%-17%
NOTES:	
The Delta Region counties include Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties.	
^a Source: California Department of Finance 1995.	
^b Data on ethnicity are not updated annually. Source: Census 1992.	
^c Median family income is in 1990 dollars. Source: California Department of Finance 1995.	
^d Poverty rate is defined as the percentage of persons below the poverty level, which is determined by an income threshold. For 1989, the average poverty threshold for a family of four was \$12,674. Poverty data are not updated annually. Source: California Department of Finance 1995.	

Table 5. Demographic Characteristics of the Delta Region Counties, 1990

Employment by Industry	Percentage of Population	
	1986	1995
Agriculture	2	2
Mining	1	1
Construction	6	4
Manufacturing	9	7
Transportation, communications, and utilities	6	6
Trade ^b	24	23
Finance, insurance, and real estate	6	7
Services	21	26
Government	25	24
Total	100	100

NOTES:

^a Employment data for the Delta Region counties include total employment for Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties.

^b Trade includes wholesale and retail trade.

SOURCE:
EDD 1996.

Table 6. Employment Composition in the Delta Region Counties, 1986 to 1995

operations, and agricultural production. Employment directly generated by waterfowl club operations is relatively minor. Most clubs in the Delta Region are managed directly by landowners; few reported employing a full-time manager. The average number of part-time employees, as reported by survey respondents, ranges from zero to six. Local contractors are accustomed to performing occasional tasks, such as dredging and levee maintenance, on some clubs.

Approximately 120 marinas or boat resorts are located in the Delta Region, providing such services as boat slips, boat rentals, dry dock facilities, lodging, marine supplies, and food and beverage service.

Agricultural production in the Delta Region counties contributed an estimated 2% of total

employment to the region's economy in 1995 (Table 6). Agricultural employment has remained fairly steady since 1986.

INCOME

Since 1986, total personal income in the Delta Region counties has increased (Table 7). In 1994, income associated with the services sector had increased to an estimated 17% of total personal income in the Delta Region. Retail income decreased slightly as a share of total income, and farm income remained unchanged. Yolo County continued to have the lowest contribution, and the economically diverse counties of Sacramento and Contra Costa the greatest contribution to total regional personal income (Table 7).

Year	Total Income	Farm Income ^a	Retail Income ^a	Services Income ^a	Range of Total Income ^b
1986	56,000	500 (1%)	4,000 (8%)	7,000 (13%)	2,000-21,000
1994	68,000	700 (1%)	5,000 (7%)	11,000 (17%)	3,000-25,000

NOTES:

Personal income for all years is expressed in 1994 dollars. The Delta Region counties include Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties.

^a Percentages indicate percent contribution to total personal income.

^b Ranges represent the highest and lowest contributions to total personal income by county for the Delta Region counties. For each year, Yolo County contributed the lowest amount and Contra Costa County the highest.

SOURCE:
California Department of Finance 1996.

Table 7. Personal Income for the Farm, Retail, and Services Sectors in the Delta Region Counties, 1986 to 1994 (millions of dollars)

FISCAL CONDITIONS

Total county property tax revenues for the Delta Region counties increased steadily from the 1985/86 fiscal year until the early 1990s (Table 8). Property tax revenues for the 1993/94 fiscal year indicate a substantial reduction in the amount collected by the individual counties (Table 8). This reduction was caused in large part to passage of a statewide initiative, the Education Reinvestment Augmentation Fund (ERAF), during the 1992/93 fiscal year. ERAF diverts a larger proportion of the county's property tax revenues to education. (Babb pers. comm.)

IMPLAN ESTIMATES FOR THE STATUTORY DELTA

Existing conditions economic data for each region are provided in Table 9. These data were obtained from the IMPLAN 1991 database. All IMPLAN data are in 1991 dollars or units because these data were the most current available at the time the models were estimated for this study. Changes to overall price levels between 1991 and 1992 were modest, about

2.8% economy-wide. The estimates from the regional models are, therefore, considered to be representative of 1992 level impacts.

Table 9 shows 1991 levels of economic activity by sector for all five regions included in the regional analysis. Final demand is the value of sales exclusive of sales between industries in each region, but total industry output includes these sales. Output often is used as an indicator of size of the regional economy. Employee compensation and other property income are wages, salaries, rents, profits, dividends, and other personal incomes paid by industries operating in the region. Total place of work income is the sum of employee compensation and property income; and total value added is total place of work income, plus indirect business taxes. IMPLAN also estimates employment by industry.

No IMPLAN data or population data are available for the statutory Delta. The statutory Delta consists of parts of six counties and includes portions of the cities of Sacramento, West Sacramento, and Stockton. Regional economic data for the Delta were estimated as follows. First, shares of populations of each

County	1986	1,990	1994
Contra Costa	108,500,000	156,000,000	94,000,000
Sacramento	117,500,000	175,000,000	130,000,000
San Joaquin	63,500,000	86,000,000	62,000,000
Solano	41,800,000	51,000,000	35,000,000
Yolo	<u>17,500,000</u>	<u>17,000,000</u>	<u>11,000,000</u>
Total	348,800,000	485,000,000	332,000,000

NOTES:

^a Tax revenues for all years are expressed in 1994 dollars.

^b The Delta Region counties includes Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties.

SOURCES:
California State Controller's Office 1986, 1990, and 1994.

Table 8. Fiscal Year Property Tax Revenues in the Delta Region Counties by County, 1986 to 1994 (dollars)

county in the Delta were estimated from data on populations of towns, cities, and Delta islands and from analysis of recent maps of the urbanized areas. Next, IMPLAN data from the Bay Region, the Sacramento Valley, and the San Joaquin Valley used for the CVPIA Programmatic Environmental Impact Statement (PEIS) (U.S. Bureau of Reclamation 1997) were reduced for the share of population estimated to live in the Delta; and these reductions were added together to obtain the 1991 Delta Region economic variables. This Delta Region excludes those portions of the counties that are not in the statutory Delta.

Table 9 shows that 1991 population in the statutory Delta was estimated at 348,000 persons of whom 194,000 were employed. The largest employers were estimated to be services, trade, and government. Agriculture provided more than 5% of employment in the region even though the region includes Antioch and Pittsburg as well as parts of Sacramento and Stockton.

Bay Region

For this report, the Bay Region includes Alameda, Contra Costa, Marin, San Francisco, San Mateo, and Santa Clara counties. Parts of Contra Costa County are included in the Delta Region.

HISTORICAL PERSPECTIVE

From approximately 1900 to the present, California's population grew exponentially. The rate of increased growth slowed between 1970 and 1990, when 10 million people were added to the state's population. Until recently, much of this growth was concentrated in the coastal areas.

Region/Industry	Final Demand Billion \$	Total Industry Output Billion \$	Employment Compensation Income Billion \$	Property Income Billion \$	Total Place of Work Income Billion \$	Total Value Added Billion \$	Employment (1000's of Jobs)
Delta Region							
Agriculture, forestry, and fisheries	0.4	0.5	0.1	0.1	0.2	0.2	11
Mining	0.2	0.2	0.0	0.1	0.2	0.2	0
Construction	1.1	1.2	0.3	0.1	0.5	0.5	13
Manufacturing	2.9	3.5	0.8	0.6	1.4	1.5	20
Transportation, communications, and utilities	0.6	1.1	0.3	0.3	0.5	0.6	8
Wholesale, retail trade	1.3	1.6	0.8	0.2	1.1	1.3	39
Finance, insurance, real estate	1.4	1.9	0.4	0.9	1.3	1.5	16
Services	1.9	2.6	1.2	0.5	1.7	1.7	53
Government enterprise and special industry	1.2	1.4	1.1	0.1	1.2	1.2	34
Total	11.1	14.1	5.0	2.9	7.9	8.6	194
Population, 1000s	348						
Bay Region							
Agriculture, forestry, and fisheries	1.2	1.5	0.4	0.3	0.7	0.7	29
Mining	3.6	3.7	0.3	1.5	1.8	2.5	5
Construction	14.8	16.9	5.2	1.6	6.8	6.8	165
Manufacturing	66.0	79.8	20.6	14.2	34.8	35.8	437
Transportation, communications, and utilities	13.9	20.9	5.9	5.0	10.9	11.5	150
Wholesale and retail trade	23.3	29.1	14.6	4.2	18.9	23.4	626
Finance, insurance, and real estate	24.9	34.4	7.0	16.5	23.6	27.3	262
Services	35.3	51.3	22.9	10.3	33.2	33.8	969
Government enterprise and special industry	15.1	16.6	13.7	0.6	14.0	14.0	406
Total	198.2	254.1	90.6	54.2	144.5	155.9	3,049
Population, 1000s	4,916						
Sacramento River Region							
Agriculture, forestry, and fisheries	1.8	2.6	0.3	0.6	0.9	0.9	55
Mining	0.7	0.8	0.1	0.5	0.6	0.6	2
Construction	8.4	9.4	2.4	0.8	3.2	3.3	100
Manufacturing	9.2	11.6	2.6	1.9	4.6	4.9	79
Transportation, communications, and utilities	2.9	5.5	1.5	1.4	2.9	3.1	43
Wholesale and retail trade	7.9	9.4	4.9	1.2	6.2	7.5	254
Finance, insurance, and real estate services	8.9	11.8	2.1	5.5	7.6	9.3	103
Government enterprise and special industry	11.1	14.5	6.4	2.7	9.2	9.3	314
Government enterprise and special industry	11.2	12.3	9.1	1.2	10.3	10.3	294
Total	62.1	77.9	29.5	15.8	45.3	49.4	1,244
Population, 1000s	2,352						

Table 9. Existing Regional Economic Conditions (Page 1 of 2)

Region/Industry	Final Demand Billion \$	Total Industry Output Billion \$	Employment Compensation Income Billion \$	Property Income Billion \$	Total Place of Work Income Billion \$	Total Value Added Billion \$	Employment (1000's of Jobs)
San Joaquin River Region							
Agriculture, forestry, and fisheries	9.1	12.5	1.4	2.4	3.8	3.9	249
Mining	4.0	4.4	0.2	2.3	2.6	3.1	5
Construction	7.1	8.4	2.1	0.6	2.7	2.8	89
Manufacturing	15.9	19.3	3.5	2.6	6.1	6.6	112
Transportation, communications, and utilities	3.5	6.0	1.6	1.4	3.0	3.2	53
Wholesale and retail trade	6.9	8.8	4.7	1.2	5.9	7.2	240
Finance, insurance, and real estate	6.5	9.2	1.5	4.6	6.1	7.5	77
Services	9.5	12.1	5.3	2.2	7.5	7.6	264
Government enterprise and special industry	6.7	7.1	6.1	0.3	6.5	6.5	212
Total	69.3	87.9	26.4	17.7	44.1	48.4	1,302
Population, 1000s	2,759						
SWP and CVP Service Areas Outside the Central Valley							
Agriculture, forestry, and fisheries	7.4	9.9	1.9	2.0	3.9	4.0	200
Mining	7.2	7.6	0.6	2.7	3.3	4.9	13
Construction	48.6	55.6	15.1	5.3	20.5	20.7	578
Manufacturing	153.3	189.0	48.3	35.3	83.6	85.5	1,384
Transportation, communications, and utilities	25.0	47.0	12.7	11.6	24.4	26.0	365
Wholesale and retail trade	69.3	85.7	41.5	12.2	53.6	68.1	2,044
Finance, insurance, and real estate	76.1	104.6	18.9	52.6	71.5	84.0	803
Services	106.4	153.8	66.8	30.0	96.8	98.7	2,884
Government enterprise and special industry	46.5	51.8	41.6	1.6	43.1	43.1	1,329
Total	540.0	705.0	247.5	153.4	400.8	435.0	9,600
Population, 1000s	16,612						
SOURCE: IMPLAN 1991.							

Table 9. Existing Regional Economic Conditions (Page 2 of 2)

The population of the Bay Region increased from about 4.537 million in 1970 to 5.484 million in 1990, for an annual growth rate of 2.25%. The growth rate slowed between 1990 and 1995.

The largest employers in the Bay Region in 1940 were the services, wholesale and retail trade, and manufacturing sectors, respectively. Agriculture, forestry, and fishing accounted for 3.8% of total household employment in the region (Census 1942). By 1992, agriculture, forestry, and fishing accounted for only 0.4% of wage and salary employment in the region (EDD 1994).

The San Francisco and Central Coast subregions show a very small percentage of income from the salmon industry compared with total personal income. The relatively large populations within these subregions help explain the relatively small percentages. Personal income from commercial salmon fishing in the North Coast Subregion approached 2% of total personal income in the region during the period from 1976 to 1980 but then fell more than 70% to 0.5% during the most recent period (1986 to 1990).

CURRENT RESOURCE CONDITIONS

Table 9 shows economic variables estimated for the Bay Region exclusive of the statutory Delta. 1991 population was estimated to be 4.92 million persons of whom 3.05 million were employed. Primary employers were services, trade, and manufacturing. Total industrial output was estimated at \$254 billion. Total employee compensation was about \$91 billion, and property income was \$54 billion.

Sacramento River Region

For purposes of regional economics, the Sacramento River Region includes the following counties: Amador, Butte, Colusa, El Dorado, Glenn, Napa, Nevada, Placer, Sacramento, Shasta, Solano, Sutter, Tehama, Yolo, and Yuba.

Parts of Sacramento, Yolo, and Solano counties are in the Delta Region and are not included in the Sacramento Region IMPLAN data in Table 9.

Most economic activity in the region is located in the Sacramento area and near Redding. Many small communities are largely dependent on agriculture.

HISTORICAL PERSPECTIVE

The first use of the Sacramento River Region was grazing and trapping, but the first significant immigration into the region involved the gold rush period of 1849 through the late nineteenth century. Most of the population lived in mining communities in the foothills; and Sacramento grew first as a port for delivery of goods and people from San Francisco, and later as the terminus of the first transcontinental railroad. Agriculture developed to serve the mining communities, and the designation of Sacramento as the state capitol led to additional growth.

Population increased from about 1.227 million in 1970 to 2.209 million in 1990, for an annual growth rate of 8.26%. The growth rate slowed between 1990 and 1995.

Economic patterns in the 20th century have mirrored national trends as services, trade, and government have become larger shares of the economy. In 1940, agriculture was the largest single employer in the Sacramento River Region. At that time, agricultural production

provided 20.8% of total household employment in the region. By 1992, agricultural production provided 3.7% of total wage and salary employment in the area, or about 37,000 jobs (EDD 1994; Census 1940). (Data for 1992 are based on place of work. EDD employment data for 1992 are not comparable with years prior to 1983 because of data revisions. Data for 1940 are taken from the decennial census [Census 1942] and are based on place of residence. Although the data are not strictly comparable in unit terms, they are consistent when expressed in percent-of-total fashion.) Employment data for 1940 were used for comparison to 1992 data because 1940 is the earliest year for which comparable data, in terms of employment categories, are available.

From 1940 to 1992, the share of manufacturing employment fell from 12.2 % to 7.8%. Transportation, communications, and utilities fell from 9.1% to 4.5%. Conversely, during the same period wholesale and retail trade increased from 18.4% to 23.2%, services increased from 17.7 % to 23.6%, and government increased from 8.2% to 26.9%. Currently, the largest proportions of wage and salary jobs in the region are in the government, services, and wholesale and retail trade sectors, respectively.

Patterns of employment growth in the Sacramento River Region reflect the changing rural and urban complexion of the region. While production agriculture provides less than 4% of wage and salary employment, the percentage varies widely among the counties. In 1992, production agriculture accounted for 33% of employment in Colusa County, 19% in Glenn County, and 16% in Yuba County; however, it accounted for less than 1% in Sacramento, Placer, and Nevada counties.

Most upper watershed lands were rural, and supported predominately natural resource based industries including farming, livestock, grazing, timber harvesting, road construction and mining. Open space and natural resource extraction have historically dominated the majority of land in the upper watersheds of the

Sacramento River Region. With the Gold Rush and World War II, more land was grazed or brought into cultivation, making it a dominant industry in the area.

CURRENT RESOURCE CONDITIONS

Table 9 shows economic variables estimated for the Sacramento River Region exclusive of the statutory Delta. The 1991 population was estimated at 2.35 million persons of whom 1.24 million were employed. Primary employers were services, government, trade, and finance/insurance/real estate. Total industrial output was estimated at \$78 billion. Total employee compensation was about \$30 billion, and property income was \$16 billion. Most of the economic activity in the region is located in the Sacramento area and near Redding. Many small communities are largely dependent on agriculture.

Open space, agriculture, and resource extraction remain the dominant features of the upper Sacramento River watershed basin. The lifestyle is relatively rural, with most urban development in towns along major transportation corridors.

San Joaquin River Region

The San Joaquin River Region includes the following counties: Calaveras, Fresno, Madera, Mariposa, Merced, San Joaquin, Stanislaus, and Tuolumne.

Parts of San Joaquin County are in the Delta Region. The economy of the region is largely urban, with most economic activity concentrated in Stockton, Modesto, Merced, Fresno, and Bakersfield. Rural communities primarily depend on agriculture and travel for their economic base.

HISTORICAL PERSPECTIVE

The European history of the San Joaquin Valley Region began with settlement by the Spanish for cattle ranching. By the mid-1800s, gold mining to the north and east created a demand for agricultural products and led to the first large irrigation developments in the region. Large areas of wetlands such as Tulare Lake were reclaimed for agriculture, and the advent of the railroad expanded agricultural markets to the rest of the nation. Many early irrigation developments were private, but the federal government played a larger role in this century with multi-purpose projects on the east side rivers and valley floor. Urban areas first developed to serve agriculture; but recent development has been more oriented toward industry, services, tourism, and government.

Population increased from about 1.676 million in 1970 to 2.974 million in 1990, for an annual growth rate of 7.72%. The growth rate slowed between 1990 and 1995.

In 1940, agriculture was the largest single employer in the San Joaquin River Region. At that time, agricultural production provided about one-third of total household employment in the region. By 1992, agricultural production provided less than 10% of total wage and salary employment in the area, or about 93,000 jobs (EDD 1994; Census 1940). Currently, the largest proportions of wage and salary jobs in the region are in the services, wholesale and retail trade, and government sectors, respectively.

Open space and agriculture, with small farming communities, dominated the upper watersheds of the San Joaquin region until the 1960s. Although agriculture, food processing, and natural resource extraction remained the main industries of the upper watersheds, urban development began to change the landscape following the 1960s.

CURRENT RESOURCE CONDITIONS

Table 9 shows economic variables estimated for the San Joaquin Region exclusive of the statutory Delta. The 1991 population was estimated at 2.76 million persons of whom 1.3 million were employed. Primary employers were services; agriculture, forestry, and fisheries; trade; and government. Total industrial output was estimated at \$88 billion. Total employee compensation was about \$26 billion, and property income was \$18 billion.

Agriculture and open space are the predominant land uses in the upper San Joaquin River watershed, with agriculture and natural resource extraction industries contributing most to the economy. Economic uses of the open space includes cattle grazing, timber harvesting, mining, and recreation. About one-third of this upper watershed land is public, being national forest and park lands, state parks, and recreation lands, and Bureau of Land Management property.

SWP and CVP Service Areas Outside the Central Valley

This region includes the service areas of all SWP entitlement holders south of Kern County. The region includes Metropolitan Water District of Southern California (MWD); Ventura, Los Angeles, and Orange counties; and the western portions of San Diego, Riverside, and San Bernardino counties.

The study area also includes service areas receiving SWP water in the California Department of Water Resource's Central Coast Region and the Antelope Valley and Mojave River planning subareas of the South Lahontan Region. Central Coast SWP contractors are in Santa Barbara and San Luis Obispo counties. These two counties are served by deliveries through the Coastal Aqueduct of SWP.

HISTORICAL PERSPECTIVE

The first European use of the Central and South Coast regions involved Spanish settlement for trade and cattle production. After statehood, the region grew quickly as agriculture, business, and industry took advantage of the region's warm Mediterranean climate.

Population increased from about 12.1 million in 1970 to 18.2 million in 1990, for an annual growth rate of 4.4%. The population growth rate slowed between 1990 and 1995.

CURRENT RESOURCE CONDITIONS

Table 9 shows economic variables estimated for the SWP and CVP Service Areas Outside the Central Valley. The 1991 population was estimated at 16.61 million persons of whom 9.6 million were employed. The Los Angeles metropolitan area is now the second largest in the nation. Primary employers were services, trade, manufacturing, and government. Total industrial output was estimated at \$705 billion. Total employee compensation was about \$247.5 billion, and property income was \$153 billion.

REFERENCES - AFFECTED ENVIRONMENT

Printed References

- Brady and Associates. 1994. Delta Protection Commission Recreation and Access Study. Submitted to the Delta Protection Commission. Walnut Grove, CA.
- California Department of Finance. 1993. California Statistical Abstract: 1993 Population Information for Contra Costa County, Sacramento County, San Joaquin County, Solano County, and Yolo County. Sacramento, CA.
- _____. 1994. California Statistical Abstract, 1994 Population Information for Contra Costa County, Sacramento County, San Joaquin County, Solano County, and Yolo County. Sacramento, CA.
- _____. 1995. California Statistical Abstract, 1995 Population Information for Contra Costa County, Sacramento County, San Joaquin County, Solano County, and Yolo County. Sacramento, CA.
- _____. 1996. Unpublished data regarding personal income trends for Contra Costa County, Sacramento County, San Joaquin County, Solano County, and Yolo County for the years 1960 to 1995. Sacramento, CA.
- California Employment Development Department. 1996. Unpublished data regarding employment trends for Contra Costa County, Sacramento County, San Joaquin County, Solano County, and Yolo County for the years 1960 to 1995. Sacramento, CA.
- California State Controller's Office. 1986. Counties of California financial transactions annual report for 1985/1986. Property tax information for Contra Costa County, Sacramento County, San Joaquin County, Solano County, and Yolo County. Sacramento, CA.
- _____. 1990. Counties of California financial transactions annual report for 1989/1990. Property tax information for Contra Costa County, Sacramento County, San Joaquin County, Solano County, and Yolo County. Sacramento, CA.
- _____. 1994. Counties of California financial transactions annual report for 1993/1994. Property tax information for Contra Costa County, Sacramento County, San Joaquin County, Solano County, and Yolo County. Sacramento, CA.
- Census. See U.S. Department of Commerce Bureau of the Census.
- EDD. See California Department of Employment Development.
- IMPLAN. 1991. Minnesota IMPLAN Group, Inc. IMPLAN System (1991 data).
- U.S. Bureau of Reclamation. 1997. Draft CVPIA Programmatic EIS. November 1997.
- U.S. Department of Commerce Bureau of the Census. 1942. 1940 Population, Ethnicity, Employment, and Income Information for Contra Costa County, Sacramento County, San Joaquin County, Solano County, and Yolo County. Washington, DC.

_____. 1952. 1950 Population, Ethnicity, Employment, and Income Information for Contra Costa County, Sacramento County, San Joaquin County, Solano County, and Yolo County. Washington, DC.

_____. 1962. 1960 Population, Ethnicity, Employment, and Income Information for Contra Costa County, Sacramento County, San Joaquin County, Solano County, and Yolo County. Washington, DC.

_____. 1972. 1970 Population, Ethnicity, Employment, and Income Information for Contra Costa County, Sacramento County, San Joaquin County, Solano County, and Yolo County. Washington, DC.

_____. 1982. 1980 Population, Ethnicity, Employment, and Income Information for Contra Costa County, Sacramento County, San Joaquin County, Solano County, and Yolo County. Washington, DC.

_____. 1992. 1990 Population, ethnicity, employment, and income information for Contra Costa County, Sacramento County, San Joaquin County, Solano County, and Yolo County. Washington, DC.

Personal Communications

Babb, Christine. Chief. Tax Division, San Joaquin County, Stockton, CA. August 22, 1996 - telephone conversation.

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