



CALFED
BAY-DELTA
PROGRAM

Affected Environment and Environmental Impacts

Social Well Being

Draft Technical Report
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**Draft Technical Report
Environmental Setting - Affected Environment
CALFED Bay Delta Program
Social Well Being**

1. SUMMARY

2. INTRODUCTION

The purpose of this technical appendix is to provide a description of the affected environment for resources associated with "Social Well Being". The evaluation of "Social Well Being" for the CALFED project is primarily concerned with two issues, community stability and environmental justice. Community stability refers to the ability of people and communities to cope with changes in economic and demographic changes which may occur as a result of a CALFED action. The affected environment for the community stability analysis includes current social conditions in terms of various economic indicators, employment opportunities, educational opportunities, and the social structure of a community. Environmental justice is evaluated based on whether one racial or economic group is disproportionately impacted by an environmental or health hazard resulting from a CALFED action. The affected environment for the environmental justice analysis includes the racial demographics within the areas affected by CALFED actions. Because farmworkers are the most racially diverse and have the lowest income of all agricultural workers, this discussion focusses on that population.

3. SOURCES OF INFORMATION

Data from 1992 and 1990 were used as the basis for the social analysis. Data from the 1980s was used for social groups, institutions and communities. Historical data about social perceptions for the study area are not consistent among most regions or is not available for some regions. Information presented in this technical appendix for changes in agricultural communities is based on reports of recent drought conditions in the Central Valley and the 1990 San Joaquin Valley Drainage Program (SJVDP).

Recent and historical demographic and economic indicator data were collected at the regional county level and aggregated into the CALFED regions. The major information sources for the demographic and economic indicator data are U.S. census data from the U.S. Department of Commerce, and other data from the California Department of Finance and the California Employment Development Department (EDD). Additional demographic and economic data were collected by reviewing past sociological studies for the study area. This information is summarized in the social well-being sections of this chapter as it pertains to specific social groups, communities, and institutions. Economic indicator data in this technical appendix are based on information presented in the Agricultural Economics and Land Use, Regional Economics, and Municipal and Industrial Land Use and Demographics technical appendices.

4. ENVIRONMENTAL SETTING

The study area for this document includes both the "problem area" and the "solution area" as defined by the CALFED project. The "problem area" is the geographical area containing the problems and issues CALFED actions are intended to address. This area includes the legally defined Delta, Suisun Bay to Carquinez Strait, and Suisun Marsh and is defined by CALFED as the Delta Region.

The CALFED solution area, which includes areas in California that may affect or be affected by potential CALFED actions, includes the Delta Region and four additional regions. These five regions include:

- Delta Region
- Bay Region
- Sacramento River Region
- San Joaquin River Region
- SWP and CVP Service Areas Outside Central Valley

For the purposes of describing the affected environment for Social Well Being, this document relies upon the grouping of counties for each region described in the Agricultural Economics Affected Environment Technical Appendix. This grouping is necessary in order to aggregate racial, income and population data from the US Census. The grouping used is shown in Table 1.

TABLE 1

CALFED Regions	Counties
Delta Region	98% of Contra Costa, 45% of Sacramento, 46% of San Joaquin, 30% of Solano, and 20% of Yolo counties.
Bay Region	Alameda, 2% of Contra Costa, Marin, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz and Sonoma.
Sacramento River Region	Butte, Colusa, Glenn, Placer, 55% of Sacramento, Shasta, 70% of Solano, Sutter, Tehama, 80% of Yolo, and Yuba.
San Joaquin River Region	Fresno, Kern, King, Madera, Merced, 54% of San Joaquin, Stanislaus, and Tulare.
SWP and CVP Service Area Outside Central Valley	Imperial, Los Angeles, Plumas, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, and Ventura.

4.2 Regulatory Context

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.", issued in 1994, is designed to focus the attention of federal agencies on the human health and environmental conditions in minority communities and low-income communities. It requires federal agencies to adopt strategies to address environmental justice concerns within the context of agency operations. In an accompanying Presidential memorandum, the President emphasizes that existing laws, including the National Environmental Policy Act (NEPA) provide opportunities for federal agencies to address environmental hazards in minority communities and low-income communities.

Executive Order 12898 and its accompanying memorandum have the primary purpose of ensuring that "each Federal agency shall make achieving environmental justice part of its mission by

identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations ..." The Executive Order also explicitly called for the application of equal consideration for Native American programs. To meet these goals, the Order specified that each agency develop an agency-wide environmental justice strategy.

The Presidential Memorandum that accompanied the Executive Order calls for a variety of actions. Four specific actions were directed at NEPA-related activities, including:

1. Each federal agency must analyze environmental effects, including human health, economic, and social effects, of federal actions, including effects on minority communities and low-income communities, when such analysis is required by NEPA.

2. Mitigation measures outlined or analyzed in EAs, EISs or Records of Decision (RODs), whenever feasible, should address significant and adverse environmental effects of proposed federal actions on minority communities and low-income communities.

3. Each federal agency must provide opportunities for community input in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving accessibility of public meetings, official documents, and notices to affected communities.

4. In reviewing other agencies' proposed actions under Section 309 of the Clean Air Act, EPA must ensure that the agencies have fully analyzed environmental effects on minority communities and low-income communities, including human health, social, and economic effects.

As a result of this mandate, several federal agencies, including CALFED agencies... adopted Environmental Justice Guidelines for incorporating environmental justice concerns into NEPA compliance.

4.3 Information Common to All Geographic Regions

This section describes the affected environment for both community stability issues and environmental justice issues. Although community stability and environmental justice issues overlap in many respects (i.e. income and poverty levels) they are discussed separately for organizational purposes. Additionally, community stability is described for the entire study area in this section rather than on a regional basis. More detail is provided

on a regional basis for aspects of the environmental justice discussion in the following sections for each CALFED region.

4.3.1 Community Stability

The affected environment for community stability includes the following:

- Social Groups in the CALFED Study Area
- Economic Indicators of Social Well Being.
- Employment Opportunities
- Community Social Structure

Social Groups in the CALFED Study Area

There are several important social groups within the study area: farmers, farm workers and agribusiness workers, commercial fishermen and fishing businesses, and recreationists.

Farmers. Farmers are those individuals who own land and/or manage farm operations for lands within the five CALFED regions, including those receiving CVP or SWP water supplies. These individuals could be affected by changes in agricultural water supply quantities or reliability. They must determine the crops to plant and related farm production expenditures. They rely on long-term and firm water supplies to manage farm production. About half of all farm operators list their principal occupations as farming. Others are employed in other jobs to supplement their income.

Farmers who own and operate family-owned corporations or farms are important and differ from corporate farm owners because family members typically have been raised in the valley, and/or live in the community

and are actively involved in operating the farms. Management remains an integral and usually very influential part of the community. Owners of corporate farms frequently reside outside the valley and hire professional managers to run the farms. The farm manager is an employee, not an owner, with allegiances to the corporate owners that may exceed those to the community.

Farm Workers and Agribusiness

Workers. Farm workers are those persons employed to work on farms; farm managers are not included. Farm workers are irrigation technicians, machine operators, and seasonal workers. California agriculture is highly dependent on seasonal and skilled farm workers to assist with crops. Seasonal workers work for several farmers within the same county. Migrant workers move from county to county to find work. Crop production in the San Joaquin River Region is the most labor-intensive within the study area. Crops grown within the region that require intensive labor are orchard, vineyard, and vegetable crops. Cotton, alfalfa, grain, sugar beet, and pasture crops are the least labor-intensive and do not require seasonal labor for planting, thinning, pruning, harvesting, sorting, or packing as do labor-intensive crops.

An EDD study of agricultural workers in the San Joaquin Valley (Alvarado, et al., 1990) reported the following worker characteristics which can generally be applied to farmworkers throughout the CALFED study area:

- Approximately 70 percent of farm laborers are men.
- The average age of laborers is 35 years.

- Eighty-seven percent of the workers were born in Mexico and 6 percent were born in the United States.
- The average laborer has completed about 6 years of schooling.
- Over 80 percent of workers are legal U.S. residents, of which 50 percent hold temporary resident status and 33 percent are permanent or naturalized U.S. citizens.
- Fifty percent of laborers who immigrated to the U.S. have been residents for 10 or more years.
- Eighty percent and 22 percent of the laborers surveyed had fathers and mothers, respectively, also employed as laborers.
- Most of laborers, 84 percent, reported annual periods of unemployment. Financial support during these was provided by unemployment insurance and savings.
- Eighty-eight percent of those surveyed would prefer to continue working as farm laborers and 63 to 87 percent believed they still would be employed as laborers for the next three years.

The average hourly wages paid to farm laborers range between \$4 and \$10, depending upon the type of work performed. The studies also found that there is a surplus of available workers in the San Joaquin Valley according to the EDD and La Cooperative (1990-1991 publication *Voice of the Fields*). These conditions have led to conditions where workers were living in open fields or in cars, increased use of Farm Labor Contract services, and shorter periods

of employment. In addition, it was reported that FLCs pay lower wages and piece contracts and workers would prefer to work directly with the grower. Farm workers, although skilled in the services that they provide, may not have the language skills or educational training to allow them to enter other areas of employment.

Agribusiness workers are those individuals that are indirectly involved in farm production and are employed in agricultural or service industries. These workers include providers of seed, fertilizer, and pesticides; equipment and irrigation technology sales; and farm processors such as cotton gins, packing and shipping companies, olive processors, and tomato processors. Agricultural workers may have the language, education, and business skills to allow them to enter other areas of employment, however studies are not available to indicate the potential for this to occur.

Commercial Fishermen and Fishing Businesses. Commercial fishermen and fishing businesses are those individuals that rely on fishing for their income. Fishermen rely on available fish quantities for their income. Changes in water supplies in inland streams and rivers could affect water quality, temperature, or quantities in streams where fish migrate and spawn. The changes in fish numbers directly affect the quantity of fish available for ocean commercial harvest and sport fishing, and thus could directly affect the livelihood of fishermen and supporting businesses. Supporting businesses include boat sales and repair, boat fuel and service, fishing equipment sales, and fish packing and processing plants. Commercial fishermen and fishing businesses are located along the California coast extending from San Luis Obispo to the

Oregon border, but are concentrated along the northern coastal towns.

Recreationists and Recreation Workers. Recreationists are boaters, sport fishermen, hunters, and bird watchers that use reservoirs, rivers and streams, and wildlife refuges that store, convey, or use Delta water supplies. Sport fishing also occurs along the coastal area and these individuals also are included in the recreationists groups. Recreation workers are those persons employed by service industries such as river guides; marina operators, boat repair businesses, and recreation supply businesses that provide gear and equipment for hunters, boaters, and fishermen. Members of this group generally are located along rivers that discharge to the Delta and Central Valley towns near CVP and SWP facilities, wildlife refuges, and rivers, and in coastal fishing communities.

Economic Indicators of Social Well Being

Social well-being is a measure of community standards and attitudes or contentment. High levels of employment, income, and opportunities for satisfaction, such as cultural or recreation opportunities, generally contribute to high levels of social well-being. In contrast, high levels of unemployment and poverty and few opportunities for satisfaction can contribute to lower feelings of contentment and social well-being. These attitudes may be reflected in the community by higher crime rates, increased alcoholism or other dependencies, and other adverse social conditions. Social groups can assist community members in dealing with adverse economic conditions by providing financial support, counseling, and family services.

Economic indicators of social well being include population demographics, median family income, per capita income, poverty rates, median house costs and unemployment rates. These indicators are summarized by region on Table 2 (To be provided)

This section summarizes regional economic indicators of social well-being in the study area as they apply to all social groups and communities. Some general conclusions derived from review of the economic data presented in Table 2 are as follows:

- Within the study area, people living in predominantly rural areas have lower incomes, higher poverty rates and higher unemployment rates, than those living in the urban regions. However, San Francisco and Los Angeles counties experience the high income levels and some of the highest poverty rates in the state.
- Within all regions except the Sacramento River region, there are pockets of prosperity that have an "averaging effect" of raising average personal income levels and lowering

average poverty and unemployment rates, as shown in Table 2.

Personal Income Personal income is measured as family and/or per capita income, as shown in Table 2. Median family income is a measure of the annual income received by families living together in the same household. The median is a statistical term for the midpoint of a data set. There is a wide range of median family income in the study area. Per capita income in the study area ranges from \$10,000 in the Tulare Lake Region and Yuba County (Sacramento River Region) to \$28,000 in Marin County in the San Francisco Bay Region.

Poverty Rates There is a wide range of poverty rates within the study area. The highest poverty rates in the study area occur in predominantly rural areas. Within the study area, poverty rates are higher among minority ethnic groups. A 1986 study by the EDD (Ong et al., 1986) estimated the poverty rates among races in California during 1980 as summarized in Table 3

TABLE 3

POVERTY RATE BY ETHNICITY

Ethnicity	Poverty Rate (Percentage)
White	6
Black	21
Hispanic	18
Asian and Other	11

Unemployment Rates As shown in Table 2, existing unemployment rates are lowest in the San Francisco Bay Region and the **South Coast Region** where more employment opportunities are available. Unemployment rates are presented as a range in areas with diverse economies such as fishing, logging, and tourism in the North Coast and urban and agricultural areas in the Sacramento Valley and San Joaquin Valley. (WAITING

TO GET THIS INFO FOR CALFED REGIONS)

Unemployment rates in the study area are higher among minority ethnic groups. The EDD (Ong et al., 1986) estimated statewide unemployment rates among races in California during 1980, as summarized in Table 4.

TABLE 4

UNEMPLOYMENT RATE BY ETHNICITY

Ethnicity	Unemployment Rate (Percentage)
White	4
Black	7
Hispanic	7
Asian and Other	4

Employment Opportunities

Employment opportunities vary within the study area regions. Urban centers offer the greatest employment opportunities for all skill levels. Employment opportunities exist in a greater number of industrial sectors than those found in the rural portions of the study area, thus providing a better employment base. Employment opportunities in rural areas involve predominant industries, such as agriculture, logging, and fishing. When economic downturns or other influencing factors occur that affect these predominant industries, workers have limited opportunities for finding new work. Changes in employment opportunities are important economic indicators of social well-being. Employment opportunities generally increase as worker education and technical skill levels increase. However, agricultural employment has been available for less

technically skilled workers. Agricultural production for many crops requires trained workers for pruning, thinning, sorting, and harvesting.

Agricultural Employment. Average annual agricultural employment was about 400,000 to 435,000 jobs during the period 1987 to 1992. Approximately 420,000 people were employed in the agriculture industry in 1992 (EDD, 1993). The relationship between the agricultural sector and the larger economy of the Central Valley is important in assessment of social factors. Agricultural employment is becoming a less significant factor in measuring the viability of the local economy in all areas of the Central Valley than it once was historically. The economy of the Central Valley has grown and diversified, and non-agricultural employment opportunities are increasing. This general trend does not hold true for

some communities. Agriculture remains the dominant industry and economic force in many smaller communities..

Urban Employment. Urban employment opportunities are predominantly within the water transfer service areas and the areas served by municipal and industrial (M&I) contractors. Employment opportunities for the people living within the service areas of major M&I contractors are diverse and more numerous than those found in predominantly rural areas. In California urban areas, service industries generally provide the greatest employment opportunities.

Factors affecting social well-being include not only employment opportunities but also job guarantees. Job guarantees are affected by seasonal employment trends and economic trends, and in some cases natural occurrences. Seasonal employment affects agricultural workers, fishermen, loggers, recreation workers, and other industries. Economic trends also may affect these industries and highly technical industries such as communications, computers, and electronics, and public service industries such as transportation, infrastructure, and building. Natural occurrences such as weather conditions can shorten or lengthen seasonal employment opportunities. For example, water shortages can reduce the number of acres farmed and the value of recreation opportunities such as boating or skiing. Natural occurrences such as drought and flood conditions and economic conditions are not under the control of CALFED and, although they are not addressed further in this chapter, are important to consider in the assessment of existing conditions.

For the CALFED study area, the largest sectors of workers which may be affected

are seasonal farmers and agricultural workers. Seasonal unemployment among farmers and agricultural workers usually occurs during the winter months following harvest and summer vacation periods. Changes in seasonal employment can affect the demand for social services. The demand for social services increases during periods of unemployment, such as requests for unemployment payments, health services, and other family support programs. The need to utilize family, health, and income support services can decrease social well being among persons who are employed during much of the year, but are seasonally unemployed.

Community Social Structure

Regional social programs are administered by county and city governments. Funding for these programs may be available from the federal government, state government, or local agencies or interest groups.

Counties Counties provide support through a variety of services. Services administered through county offices include worker education and training programs, job placement services, aid for families and children, and welfare programs. These services are available from the following types of agencies.

- Private Industry Council
- Employment Development Department
- Economic Opportunities Commission
- Employment Development Corporation

Cities Cities provide public protection services and health services to residents. Employment and job training programs are not administered by cities, except under special circumstances in which a city may promote economic development and

employment opportunities, or provide funding to other local agencies for worker placement.

Educational Opportunities School districts can sponsor worker education programs such as English as a second language (ESL) or basic technical skills. School districts generally are considered to provide education for grades 1 through 12. However, local community colleges also assist the workers by improving education and labor skills. The local Private Industry Councils and Employment Opportunities Commissions can work with the schools to provide worker training.

The schools also can provide after-school child care and subsidized meals to assist working families and disadvantaged children. In areas with low family income, these programs can be valuable.

Local Communities Local communities provide a social base for people to access assistance and support during times of need. The social structure of a community may provide job training, educational opportunities, family support services, religious and cultural outlets for support and counseling, recreational opportunities, and monetary assistance. These services may be available through community or county agencies or from cultural and religious institutions within the community. The local community also provides an identifying factor for all residents and a sense of belonging. When economic changes occur within an area, such as the loss or gain of a major employer or drought or flood conditions, the local community can be affected significantly. This is especially true if the local economy is centered around one industry type, such as the forestry,

agriculture, fishing, or mining, or defense industries.

The community is a crucial level of social organization. It is at this level that most social services are delivered, social networks formed, and values and beliefs confirmed. The major communities represented in the CALFED study area are agricultural, commercial fishing and recreation.

4.3.2 Environmental Justice

The analysis of potential environmental justice issues focusses on the farmworker population. Within the potentially affected party, this population is the most racially diverse.

The vast majority of US farmworkers have been Mexican immigrants and their children since the Bracero Program, which operated from 1942 to 1964, brought in more than 4 million laborers from Mexico. Earlier decades saw substantial numbers of Chinese, Japanese, Filipinos, and Native and African Americans. By 1983, an estimated 90% of the seasonal farm laborers in California were Mexicans or Chicanos, while nationwide the figure was 60%. Most migrant farmworkers are either American citizens or are working in the country legally. The Department of Labor estimates that about 25% of migrant farmworkers are illegal immigrants. Additionally, the Department of Labor estimates that at any given time, 12 percent, or at least 190,000 domestic farm workers, nationwide, are out of work

The majority of farmworkers earn annual wages of less than \$7,500. Although wage rates for farmworkers have gone up over the last decade, when they are adjusted for inflation we find that farmworkers' real wages have decreased 15-25% in that time.

(National Agricultural Statistics Service,
1991)

TABLE 5

ETHNICITY BY REGION

Region	Ethnicity (percentage)			
	White	Black	Asian	Hispanic
Delta Region	68	8	9	14
Bay Region	61	8	15	16
Sacramento River Region	82	4	5	10
San Joaquin River Region	62	4	6	30
CVP and SWP Service Areas Outside of the Central Valley	52	9	9	30
REFERENCE: California Department of Finance, 1990				

4.4 Delta Region

General Population Demographics

The racial distribution within the Delta Region is shown on Table 5. Within the Delta Region 68% of the population is white, 8% is black, 9% is Asian and 16% is hispanic. (Census of Population and Housing, 1990)

Farmworker Demographics

Within the Delta Region there are approximately 900,000 (1994 Census) acres of farmland. Because the farmworker population tends to migrate seasonally and

live in temporary housing, reliable numbers of farmworkers are difficult to obtain. Based on the 1990 Census of Population and Housing, within the Delta Region, the farmworker population included approximately 5,480 farmworkers. It's likely that actual numbers are much larger than this census figure. However, of those counted in the census, 77% were Hispanic, 15% were White, <1% were Black, 7% were Asian/pacific islanders and <1% were American Indian or Eskimo/Aleutian. Table 6 shows the racial breakdown in percentages for all farmworkers in the 1990 Census of Population and Housing.

**Table 6
Racial Distribution of Farmworkers by Region**

Region	Hispanic	White	Black	American Indian/ Eskimo Aluetian	Asian Pacific/ Islande r	Total # of Farm- workers
Delta	77%	15.1%	0.8%	0.3%	6.5%	5,470
Bay	82.2%	14.4%	1%	0%	2.2%	12,230
Sacramento River	58.9%	30.9%	0.4%	1%	8.2%	11,560
San Joaquin River	84%	11.9%	0.3%	0.2%	3.4%	74,220
SWP and CVP Service Area	86.9%	10.1%	.9%	.2%	1.7%	44,960
Total #'s	122,490	19,500	840	400	4,860	148,440

Source: 1990 Census of Population and Housing

4.5 Bay Region

The racial distribution within the Bay Region is shown on Table 5. Within the Bay Region 61% of the population is white, 8% is black, 15% is Asian and 16% is hispanic. (Census of Population and Housing, 1990)

Farmworker Demographics

Based on the 1990 Census of Population and Housing, within the Bay Region, the farmworker population included approximately 12,230 farmworkers. This number is likely significantly smaller than actual numbers. However, of those counted in the census, 82% were Hispanic, 14% were White, <1% were Black, 2% were Asian Pacific Islanders and <1% were American

Indian or Eskimo/Aleutian. Table 6 shows the racial breakdown in percentages for all farmworkers in the 1990 Census of Population and Housing.

4.6 Sacramento River Region

The racial distribution within the Sacramento River Region is shown on Table 5. Within the Sacramento River Region 82% of the population is White, 4% is Black, 4% is Asian and 10% is Hispanic. (Census of Population and Housing, 1990)

Farmworker Demographics

Based on the 1990 Census of Population and Housing, within the Sacramento River Region, the farmworker population included approximately 11,560 farmworkers. It's

likely that actual numbers are much larger than this census figure. However, of those counted in the census, 59% were Hispanic, 31% were White, <1% were Black, 8% were Asian Pacific Islanders and <1% were American Indian or Eskimo/Aleutian. Table 6 shows the racial breakdown in percentages for all farmworkers in the 1990 Census of Population and Housing. General Population Demographics

4.5 San Joaquin River Region

The racial distribution within the San Joaquin Region is shown on Table XX. Within the San Joaquin River Region 61% of the population is White, 4% is Black, 6% is Asian and 29% is Hispanic. (Census of Population and Housing, 1990)

Farmworker Demographics

Based on the 1990 Census of Population and Housing, within the San Joaquin River Region, the farmworker population included approximately 74,220 farmworkers. It's likely that actual numbers are much larger than this census figure. However, of those counted in the census, 84% were Hispanic, 12% were White, <1% were Black, 4% were Asian Pacific Islanders and <1% were American Indian or Eskimo/Aleutian. Table XX shows the racial breakdown in percentages for all farmworkers in the 1990 Census of Population and Housing.

4.6 SWP and CVP Service Areas Outside Central Valley

The racial distribution within the SWP and CVP Service Areas Outside the Central Valley is shown on Table 5. Within this Region 52% of the population is White, 9% is Black, 9% is Asian and 30% is Hispanic. (Census of Population and Housing, 1990)

Farmworker Demographics

Based on the 1990 Census of Population and Housing, within the San Joaquin River Region, the farmworker population included approximately 44,960 farmworkers. It's likely that actual numbers are much larger than this census figure. However, of those counted in the census, 87% were Hispanic, 10% were White, <1% were Black, 2% were Asian Pacific Islanders and <1% were American Indian or Eskimo/Aleutian. Table 6 shows the racial breakdown in percentages for all farmworkers in the 1990 Census of Population and Housing. General Population Demographics

REFERENCES

NOTE: The major reference for this Technical Appendix is the Technical Report on Social Conditions prepared for the CVPIA. The following references for that report are incorporated into this Technical Appendix.

Alvarado, Andrew J., Gary L. Riley, and Herbet O. Mason, 1990, Agricultural Workers in Central California in 1989, Employment Development Department.

Alvarado, Andrew J., Gary L. Riley, and Herbert O. Mason, ND, Agricultural Workers in Central California, Phase II, 1990-91, Employment Development Department, California Agricultural Studies 91-5.

Applied Development Economics, Inc. Subregional Economic Development Strategy for the Cities of Firebaugh, Kerman, Mendota, San Joaquin, and the Surrounding unincorporated Areas, Prepared for Fresno County, January 1994.

Archibald, Sandra, 1990, Economic Profile of Agriculture in the Westside of the San Joaquin Valley, prepared for the San Joaquin Valley Drainage Project (SJVDP).

Battelle, Report Voluntary Organizations Representing Civic, Conservation, and Recreation interests in Agricultural Drainage Management in the San Joaquin Valley : Views on Drainage Management Alternatives, prepared by Kristi M. Branch, for the San Joaquin Valley Drainage Program, August 1990.

Branch, Kristi M. and Gregory A. Poremba, 1990, Adoption and Diffusion of Innovative Irrigation and Drainage Management Technologies and Practices: A Sociological Perspective, prepared for the San Joaquin Valley Drainage Program,.

Branch, Kristi M., 1990, Voluntary Organizations Representing Civic, Conservation, and Recreational Interests in Drainage Management in the San Joaquin Valley: Views On Drainage Management Alternatives, prepared for the San Joaquin Valley Drainage Program,.

Branch, Kristi and Gregory A. Poremba, 1990, Social Aspects of Agriculture in the Westside of the San Joaquin Valley, prepared for the San Joaquin Valley Drainage Program.

Branch, Kristi, Douglas A. Hooper, James Thompson, and James Creighton, 1984, Guide to Social Assessment: A Framework for Assessing Social Change, Boulder, CO: Westview Press.

Bureau of Indian Affairs, 1991, Indian Service Population and Labor Force Estimate.

California Department of Finance, 1993, California Statistical Abstract.

_____, 1993, Population Estimates for California State and Counties, Report 92 E-2.

California Department of Water Resources, 1993, Bulletin 160-93, Draft of the California Water Plan Update.

California Institute for Rural Studies, 1993, Technical Memorandum for Preliminary Analysis of Social Impacts, prepared for the Bureau of Reclamation.

Campbell, Mark B., 1988, Ownership and Recreational Use of Wetlands in the Grassland Water District and Refuges in the Central San Joaquin Valley, prepared for the SJVDP.

Carter, Harold and Carole Nuckton, Editors, 1990, California's Central Valley: Confluence of Change (Proceedings of symposia sponsored by the University of California - May 3rd and June 5th, 1990). Agricultural Issues Center, University of California, Davis, CA.

Carter, Harold, Julie Spezia, Editors, 1991, People Pressures: California's Central Valley, Agricultural Issues Center, University of California, Davis, CA.

Carter, Harold, Ray Coppock and Lynne Kennedy, Editors. 1991, Resource Pressures: California's Central Valley. Agricultural Issues Center, University of California, Davis, CA.

Commerce, Dept., Bureau of Census, 1989, 1987 Census of Agriculture: California State and County Data, Washington D.C. .

Community Services Task Force, 1977, The Family Farm in California, report of the Small Farm Viability Project, submitted to the State of California, Sacramento, CA.

Controller's Office, State of California, 1990-1992, Financial Transactions Concerning Cities of California, Sacramento, CA, published annually.

_____, 1990-1992, Financial Transactions Concerning Counties of California, Sacramento, CA, published annually.

_____, 1990-1992, Financial Transactions Concerning School Districts of California, Sacramento, CA, published annually.

Coontz, Norman D., 1989, Agricultural Water Management in a Drainage Problem Area within the Kings River Conservation District, prepared for the SJVDP, Review Draft.

Creighton, James L., 1985, [Other contributors: Robert Horton, Craig Stroh, Kristi Branch.] A Preliminary Analysis of the Socioeconomic Impacts of Terminating Irrigation to 49,000 Acres in the San Joaquin Valley, a report to the U.S. Bureau of Reclamation, Sacramento, CA. 40 pgs. 1985.

_____, 1986, [With material regarding the future prospects of crops provided by Don Villarejo, California Institute for Rural Studies], Socioeconomic Issues Facing Agriculture in the San Joaquin Valley, a report to the U.S. Bureau of Reclamation, Sacramento, CA, 1986.

- Dinar, Ariel, 1990, Adoption of Improved Irrigation and Drainage Technologies in the Westside of the San Joaquin Valley, prepared for the SJVDP, Review Draft.
- Employment Development Department, 1992, Monthly Labor Force Data for Counties, Report 400C.
- _____, 1993, Agricultural Employment: Calendar Year 1992, Employment Development Department.
- Employment Development Department Special Projects Unit, 1989, Agricultural Employment Pattern Study, Labor Market Information Division, Employment Development Department.
- Fujimoto, Isao, 1987, San Joaquin Valley Drainage Program Area Communities: A Summary of the Report to the Bureau of Reclamation, prepared for the San Joaquin Valley Drainage Program, Sacramento, CA.
- Fuller, Varden, 1991, Hired Hands in California Farm Fields: Collected Essays on California's Farm Labor History and Policy. Agricultural Experiment Station, Division of Agriculture and natural Resources, University of California, Oakland, CA.
- Goldschmidt, Walter R. [Bureau of Agricultural Economics], Large Farms or Small: The Social Side; paper prepared for the Annual Meeting of the Farm Economics Association, June 28, 1944.
- Goldschmidt, Walter R. [Professor of Anthropology, University of California, Los Angeles] The Social Implications of Large-Scale Land Control, statement prepared for the Hearing on Land Resources Monopoly, [Senator Fred R. Harris, Presiding] March 9, 1972.
- Troy Fletcher, Fisheries Biologist, Yurok Tribe, 1994. Telephone conversation, January 13, 1994
- Zeke Grader - Executive Director, Pacific Coast Federation of Fishermen's Associations, 1994. Telephone conversation, January 5, 1994.
- Haslam, Gerald, with photographs by Stephen Johnson and Robert Dawson, 1993, The Great Central Valley: California's Heartland, University of California Press.
- Hoopa Valley Indian Reservation, 1993, 1993 Overall Economic Development Program.
- Howitt, Richard, Nancy Moore, and Rodney T. Smith, 1992, A Retrospective on California's Emergency Drought Water Bank, a report prepared for the California Department of Water Resources.
- Johnson, Scott et al., 1975, The San Joaquin Valley Basin, Appendix I Economic Base Study, U.S. Department of Agriculture.

- Kawamura, Y., Rochin, R., Gwynn, D. and Dolber-Smith, E., 1989, Rural and Urban Poverty in California: Correlations With Rurality and Socioeconomic Structure, *Journal of Economics and Business Studies*, Vol. 29, June, 1989, Japan.
- Mines, Richard L. and Philip L. Martin, 1985, A Profile of California Farmworkers, Division of Agriculture and Natural Resources, University of California, Giannini Information Series No. 86-2.
- Mines, Richard, Martin, Philip, Giannini Foundation of Agricultural Economics University of California, A Profile of California Farmworkers, July 1986.
- National Agricultural Statistics Service, 1991. Farm Employment and Wage Rates, Estimates Division, U.S. Department of Agriculture. Statistical Bulletin No. 822 (March 1991)
- National Research Council, 1989, Irrigation-Induced Water Quality Problems: What Can Be Learned from the San Joaquin Valley Experience, Committee on Irrigation-Induced Water Quality Problems, Water Science and Technology Board, National Academy Press, Washington D.C.
- Office of State Controller, County and City Expenditures, 1991 to June 30 1994 facsimile.
- Ong, P., Chapa, J., Schink, W., Jones, G. and Braun, T., 1986, Socio-economic Trends in California: 1940 to 1980, California Employment Development Department.
- Pacific Fisheries Management Council, 1992, Review of 1991 Ocean Salmon Fisheries, Pacific Fisheries Management Council.
- Parks and Recreation, 1987, Department of, State of California, Public Opinions and Attitudes on Outdoor Recreation in California.
- Rand, The Impact of Water Supply Reductions on San Joaquin Valley Agriculture, DRU-892-EPA, December 1994, prepared by Lloyd S. Dixon and Larry L. Dale, for the U.S. Environmental Protection Agency, Region 9.
- Rochin, Refugio I. and Monica D. Castillo, 1992, Immigration, Demographic Change and 'Colonia' Formation in California: Evolving "Immerzeration", Working Paper No. 91-7, Department of Agricultural Economics, University of California, Davis.
- San Joaquin Valley Drainage Program, 1987, On-Farm and Wetland Management Practices, Summary of workshops conducted in Mendota and Hanford,.
- _____, 1988, Agricultural Land Use and Wildlife in the San Joaquin Valley, 1769-1930.
- Smith, Rodney T., 1988, Trading Water: An Economic and Legal Framework for Water Marketing, The Council of State Policy and Planning Agencies, Washington D.C.

- Solem/Loeb & Associates, 1987, Attitude Survey, prepared for the Contra Costa Water District.
- Spectrum Economics, Inc., 1991, Cost of Industrial Water Shortages, California Urban Water Agencies.
- The New United Way, Vision 2020 County Report, Fresno County and Region 5, 1994.
- James Wilson, California Department of Education, Sacramento, CA, 1994. January 14, 1994.
- U.S. Bureau of Reclamation, 1978, Acreage Limitation: Westlands Case Study, Volume 1 of 2.
- US Census, Table 51, Financial Characteristics, California, 1990 to 1980.
- US Fish and Wildlife Service, Final Report to Congress on the Central Valley Project Impacts to the Anadromous Fish Resource, Fisheries, and Associated Economic, Social, or Cultural Interests, December 1995
- _____, 1984, Planning Instructions: Social Investigations for Planning. U.S. Bureau of Reclamation, Denver, CO.
- _____, 1988, Social Appendix: Kellogg Reformulation Study, Draft Environmental Statement, August 1988.
- _____, Memorandum of Agreement between the Bureau of Reclamation and Hoopa Valley Indian Tribe. 1992.
- _____, 1993, Implementation of the Reclamation Reform Act of 1982 in the Central Valley of California, Draft Environmental Impact Statement, Section 3.8 --Social Conditions, pps. 3.8-1 to 3.8-50, and Technical Memorandum for Task 11 - Preliminary Analysis of Social Impacts.
- _____, Indian Trust Policy, policy issued by Commissioner, Bureau of Reclamation July 02, 1993.
- U.S. General Accounting Office, 1989, Water Subsidies. Basic Changes Needed to Avoid Abuse of the 960-Acre Limit, A report to the Chairman, Subcommittee on Water, Power and Offshore Energy Resources, Committee on Interior and Insular Affairs, House of Representatives, GAO/RCED-90-6, Washington D.C.
- USDA Forest Service. 1991, An Economic Assessment of Alternative Water-level Management for Shasta and Trinity Lakes, Southeastern Forest Research Experiment Station, Atlanta, GA, Draft, 54 pages.

USDA Forest Service, 1993, Shasta National Forest, CUSTOMER Final Report, Outdoor Recreation and Wilderness Assessment Group, South Eastern Forest Experiment Station, Atlanta, GA.

USDA Forest Service, 1993, Trinity National Forest, CUSTOMER Final Report, Outdoor Recreation and Wilderness Assessment Group, South Eastern Forest Experiment Station, Atlanta, GA.

USDA Forest Service, 1993, Whiskeytown Lake - Trinity National Recreation Area, CUSTOMER Final Report, Outdoor Recreation and Wilderness Assessment Group, South Eastern Forest Experiment Station, Atlanta, GA.

U.S. Department of Commerce, 1920 - 1990, U.S. Census, published every decade.

_____, Bureau of the Census, January 1994, report on median net worth by ethnicity.

Villarejo, Don and Judith Redmond, 1988, Missed Opportunities -- Squandered Resources, Davis, CA: California Institute for Rural Studies. 1988.

Draft
Environmental Impacts/Consequences
Technical Report
Social Well-Being

1. INTRODUCTION

The purpose of this report is to analyze and describe changes that could result from implementing each of the three CALFED alternatives. This report will be used with other information to develop the impact portion of the CALFED Programmatic Environmental Impact Report/Environmental Impact Statement (EIR/EIS).

The assessment of social-well being will address two issues, community stability and environmental justice. The assessment of community stability will evaluate the ability of people and communities to cope with changes in economic and demographics which may occur as a result of a CALFED action. Environmental justice will be evaluated based on whether one racial or economic group would experience "disproportionately high and adverse human health or environmental effects" from a CALFED action.

The potential impacts discussed are described for five separate regions including the Delta Region, the Bay Region, the Sacramento River Region, the San Joaquin River Region and the State Water Project and Central Valley Project Service Areas Outside the Central Valley.

2. EXECUTIVE SUMMARY

2.1 Summary of Potentially Significant Impacts

Potentially significant impacts to social well being are primarily tied to CALFED actions which could result in loss of jobs in the agricultural sector. Actions which require the conversion of agricultural lands or reduce the amount of water available will decrease the irrigable acreage. In some cases acreage may shift to other areas of a given region or to another region entirely. In all cases, the fate of the farmland translates into the fate of jobs for farmworkers and related agribusinesses. The loss of jobs in the agricultural sector is a potentially significant impact which varies with each alternative. The impact by alternative is summarized on Table 1.

Impacts to recreationists and recreation workers are, of course, intimately tied to the construction of new facilities. Impacts to this group are also summarized on Table 1.

Impacts to fishermen and fishery businesses are tied to the status of the fishery in each region. These impacts are also summarized on Table 1.

No environmental justice impacts are anticipated as there are no CALFED actions which are anticipated to result in an environmental or health hazard which would disproportionately affect a minority or low-income population.

2.2 Summary of Mitigation Strategies

Because the major impact to social-well being is the loss of jobs, mitigation strategies for lost jobs should include the following:

Minimize the number of lost jobs to the extent possible by relocating facilities, shifting agriculture to new areas.

Provide training and educational opportunities for unemployed individuals to reenter the workforce in a different field.

2.3 Summary of Potentially Significant Unavoidable Impacts

Jobs lost to farmworkers and recreation workers due to implementation of CALFED actions, such as conversion of agricultural lands to habitat and dislocation of recreation facilities, may result in potentially significant unavoidable impacts. In some cases jobs may be shifted to other areas, however in some cases, jobs will simply be eliminated with no replacement.

3. ASSESSMENT METHODS

Predicting the human behavior which could result from CALFED actions is a difficult task. Past studies of community stability and social conditions related to water supply projects have focused on social, economic, and land use changes resulting from short term drought conditions. The actual effects of implementation of long term water supply programs cannot be predicted with complete assurance, but must be projected based on assumptions of human behavior, primarily the assumed actions of farm managers and land owners implementing long term changes to farm operations. The evaluation for the social analysis is based on the regional economics analysis and projected changes to regional employment. These findings have been applied to the analysis for the identified social groups. Environmental justice is assessed based on the how CALFED actions could disproportionately effect low-income and minority groups.

4. SIGNIFICANCE CRITERIA

Community stability is measured by several economic indicators as well as community structure. Economic indicators include per capita and per household income, unemployment, poverty rates and employment opportunities. Adverse impacts to stability could result from changes to any of these indicators. Community structure is reflective of the community's ability to adapt to changes such as an increase in unemployment or a shift in employment opportunities. Measures of community structure include the availability of

job training resources or educational opportunities.

Environmental justice impacts are significant if there is determined to be a disproportionate distribution of environmental or health impacts to people of a particular minority racial background or low income group.

5. ENVIRONMENTAL IMPACTS /CONSEQUENCES

5.1 Impact Analysis

5.1.1 Description of No-Action Resource Conditions

Delta Region Resource Conditions

Farmers. The key factors which will affect farmers in the No-Action Alternative include changes in the markets for agricultural products; the supply and reliability of irrigation water; the development of water transfer markets; and the cost of water. Increasing demand for fruits and vegetables is expected to result in a shift toward production of these commodities, and away from field crops and grains. Decreases in water availability due to the CVPIA and the Bay-Delta Accord are likely to be made up with groundwater supplies, however, depending on the size of the deficit, groundwater may not be able to completely compensate.

Farmworkers and Agribusiness. The number of agricultural jobs available may increase in some areas due to projected changes in crop production to higher value and more labor intensive crops. However, agricultural employment would remain seasonal. There could be improvements in mechanization for picking and sorting crops and other improvements that could eliminate some tasks that are currently labor intensive. Changes in irrigation technology also may occur that could change farm labor needs. Changes to the population, crop production, and technology resulting in a decrease in employment opportunities or the duration of employment may create an increased need for social services

to provide food, health care, and housing for those facing economic hardship. These needs may be seasonal or could be year-around depending on the extent of the change and the education, training, and technical skills of the population in the area affected.

Recreationists and Recreation Workers. No major impacts are anticipated with the No-Action Alternative except that as population increases existing resources will be stressed.

Bay Region Resource Conditions

Same as Delta Region.

Sacramento River Region- Resource Conditions

Same as Delta Region.

San Joaquin River Region - Resource Conditions

Same as Delta Region.

SWP and CVP Service Areas Outside the Central Valley - Resource Conditions

Same as Delta Region.

5.1.2 Description of Alternative Resource Conditions

Delta Region

A summary of the impacts in the Delta Region is shown on Table 2.

Alternative 1

Ecosystem Restoration Program Plan (ERPP)

Implementation of the ERPP in the Delta will result in the conversion of 120,000- 150,000 acres of agricultural lands to restored habitat. In Alternative 1a this conversion will result in change in the number of jobs for farmers, farmworkers and agribusiness, and recreation workers. The numbers of jobs anticipated to be impacted is discussed in the Technical

Appendix on Regional Economics. This loss of jobs is a potentially significant adverse impact.

Although the converted acreage remains constant in the ERPP across alternatives, the number of jobs lost decreases as additional water becomes available in Alternatives 1b and 1c. With additional water available, the displaced agricultural lands can shift to unirrigated lands in other portions of the Delta Region. Because the farmworker population is generally migrant and accustomed to traveling to work in various areas of the state, the relocation of these acres in Alternatives 1b and 1c is not considered to be a significant impact.

Additional discussion regarding the potential impacts to each social group is described below and referred to in subsequent discussions for each of the CALFED regions and Alternatives.

Farmers. Per capita income for displaced farmers and families may decline and could be replaced by social service and support programs. Farm managers may be required to travel further to their place of employment or move to other areas to gain employment. The need to move or to be away from home and family for longer periods, could add additional burden to other family members.

It is anticipated that displaced farm managers and technicians could find work in other regions or other jobs related to agriculture. While there may be a temporary increase in the need for social services to provide training or economic assistance for a portion of these displaced workers, this need is not expected to be large.

Farmworkers and Agribusiness Workers. In Alternative 1a, the most significant impact would be the concentrated loss of jobs for farmworkers who tend to have limited skills. Stress may be put on existing social services such as welfare, and job training to help provide transitions for displaced farmworkers. With Alternative 1a, because the Delta Region is already experiencing high levels of unemployment and the labor force is primarily farm workers, the social and economic structure of these communities could be adversely affected. Examples may include higher demand

for social services, increased crime such as shoplifting, and loss of local small businesses such that customers may have to travel further to purchase supplies.

Less technically skilled workers and those lacking basic education levels and English language skills may have more difficulty finding new employment.

Recreationists and Recreation Workers.

Implementation of the ERPP in the Delta Region would result in the elimination of some recreation jobs if habitat projects displace existing recreation facilities. However, the increase in habitat values overall is anticipated to result in increased recreation opportunity and will likely result in a net gain in recreation related jobs in this Region.

Displaced recreation workers would likely need to receive social service benefits. Many recreation workers are seasonal and part-time employees and many are students who look for seasonal employment. Loss of recreation jobs for these individuals would likely cause them to seek temporary employment elsewhere.

Reallocation of water supplies from agricultural uses to fish and wildlife habitat uses may result in improved recreation opportunities and the additional income generated from hunters, birders, and sport fishermen visiting the wildlife refuges and streams. In addition there could be improvements to aesthetic values in rivers and refuge lands and environmental benefits resulting in an increase in recreation jobs that is difficult to quantify. A minor benefit of increased water supplies for fish and wildlife habitat uses would be employment opportunities related to environmental restoration including both habitat restoration and structural improvements. This would include such actions as restoration and improvement of refuge facilities and spawning areas in streams. These new jobs could replace a small number of jobs lost in the area.

Fisherman and Fishing Businesses. Because the ERPP will result in an increase in fisheries there is potential that new jobs will be created in the fisheries sector, however, the number of jobs

or level of improvement to existing jobs cannot be quantified. The Fish, Wildlife and Recreation Economics technical appendix evaluates the economic benefits that may occur in the future for communities in fishing areas.

Environmental Justice The largest loss of jobs associated with implementation of the ERPP is to the farmworker population which is predominately hispanic in the Delta Region. This is likely to result in a disproportionately greater economic impact on this minority population and on this low-income employment sector in general, then on others. However, the ERPP is not anticipated to result in an environmental or health impact on this population, it is therefore not considered to be an environmental justice issue.

Water Quality Program

Farmers. Implementation of the water quality program could affect the cost of doing agricultural business in the Delta Region by either lowering costs due to improved water supply (reduced salinity) or raising costs due to BMP implementation costs. This could have an effect, either positive or negative, on farmers.

Farmworkers and Agribusiness Workers. The impact to farmworkers and agribusiness workers will depend on the impact to farmers.

Recreationists and Recreation Workers. Improved water quality in the Delta is anticipated to improve the overall recreation experience in the Delta. While the effects of the water quality program may not have a direct impact on the levels of recreation, the combined effect of the water quality program with the ERPP is likely to have a significantly positive impact on recreationists and potentially create more jobs for recreation workers.

Water Use Efficiency Program

Farmers. Implementation of water use efficiency BMPs could raise the cost of agricultural production, resulting in changes in crop selection which could reduce the need for farmworkers. This potential impact of this program cannot be quantified at this time,

however, additional information regarding the potential costs of this program to the agricultural community is included in the Technical Appendix on Agricultural Economics.

Farmworkers and Agribusiness Workers. The impact to farmworkers and agribusiness workers will depend on the impact to farmers.

Levee System Integrity Program

Farmers. Implementation of the Levee System Integrity Program will require the purchase and conversion of agricultural lands in the Delta Region. However, the net impact to farmers from this program should be positive as improvements to the Levee system will afford agriculture with greater protection from inundation and salinity intrusion.

Farmworkers and Agribusiness Workers. Some farmworker jobs may be lost due to the conversion of agricultural lands for levee setbacks.

Recreationists and Recreation Workers. Some existing recreation facilities may be displaced, also displacing recreationists and recreation workers, either temporarily during construction or, potentially permanently. Replacement facilities should be developed for any facilities impacted by this program, however there is the potential that replacement facilities may require recreationists and recreation workers to travel further distances than in the current conditions.

Storage and Conveyance Facilities.

Farmers. Some conversion of agricultural lands may be required to construct proposed channel enlargements in Alternative 1c.

Farmworkers and Agribusiness Workers. Impacts would depend on impacts to farmers, above.

Fisherman and Fishing Businesses. The CVP-SWP improvements included in Alternatives 1b and 1c may improve fishery conditions however, their impact on sport and commercial fishing cannot be quantified.

Alternative 2

Ecosystem Restoration Program Plan (ERPP)

The type of impacts associated with the ERPP would be the same as those described for Alternative 1, however the extent of impacts for Alternative 2 would vary due to the variation in water yield and the opportunity to shift agriculture to various parts of the Delta. The potential impacts on jobs is discussed in detail in the Technical Appendix on Regional Economics.

Water Quality Program

Same as Alternative 1.

Water Use Efficiency Program

Same as Alternative 1.

Levee System Integrity Program

Same as Alternative 1.

Storage and Conveyance Facilities

Farmers. Construction of new isolated facility in 2c, and floodway setbacks and wetlands habitat in 2d and 2e and Tyler Habitat in 2e would require conversion of farmland. Impacts have not been quantified, but would be similar in character to those described for the ERPP.

Farmworkers and Agribusiness. Impacts would depend on the impact to farmers.

Recreationists and Recreation Workers. Creation of additional wetland habitat in 2d and 2e could provide additional recreation area and potentially jobs.

Alternative 3

Ecosystem Restoration Program Plan (ERPP)

The type of impacts associated with the ERPP would be the same as those described for

Alternative 1, however the extent of impacts for Alternative 3 would vary due to the variation in water yield and the opportunity to shift agriculture to various parts of the Delta. The potential impacts on jobs is discussed in detail in the Technical Appendix on Regional Economics.

Water Quality Program

Same as Alternative 1.

Water Use Efficiency Program

Same as Alternative 1.

Levee System Integrity Program

Same as Alternative 1.

Storage and Conveyance Facilities

Farmers. Construction of the isolated facility in 3a-3e and 3g-3i would require conversion of Delta agricultural land. Conversion for these alternatives would generally require less than 10,000 acres. However, 3f, the Chain-of-Lakes alternative could require up to 80,000 acres. The impacts to farmers would obviously vary the extent of the conversion. However, 3f is considered to be a significant impact. Impacts would be similar in character to those described for the ERPP.

Farmworkers and Agribusiness. Impacts would depend on impacts to farmers and would be similar to those described for the ERPP.

Recreationists and Recreation Workers. Construction of the isolated facility in 3a-3e and 3g-3i could permanently close or relocate some recreation facilities in the eastern portion of the Delta. These closures or relocations could impact recreationists and recreation workers. This is a potentially significant impact.

Bay Region

A summary of the impacts in the Bay Region is shown on Table 3.

Alternative 1

Ecosystem Restoration Program Plan (ERPP)

The type of impacts associated with the ERPP would be the same as those described for the Delta Region. The potential impacts on jobs is discussed in detail in the Technical Appendix on Regional Economics.

Water Quality Program

The anticipated impacts of the water quality program on social groups are similar to those in the Delta. See discussion under Delta Region.

Water Use Efficiency Program

The anticipated impacts of the water use efficiency program on social groups are similar to those in the Delta. See discussion under Delta Region.

Levee System Integrity Program

Not applicable.

Storage and Conveyance Facilities

Not applicable.

Alternative 2

Ecosystem Restoration Program Plan (ERPP)

The type of impacts associated with the ERPP would be the similar to those described for the Delta Region. The potential impacts on jobs is discussed in detail in the Technical Appendix on Regional Economics.

Water Quality Program

The anticipated impacts of the water quality program on social groups are similar to those in the Delta. See discussion under Delta Region.

Water Use Efficiency Program

The anticipated impacts of the water use

efficiency program on social groups are similar to those in the Delta. See discussion under Delta Region.

Levee System Integrity Program

Not applicable.

Storage and Conveyance Facilities

Not applicable.

Alternative 3

Ecosystem Restoration Program Plan (ERPP)

The type of impacts associated with the ERPP would be the similar to those described for the Delta Region. The potential impacts on jobs is discussed in detail in the Technical Appendix on Regional Economics.

Water Quality Program

The anticipated impacts of the water quality program on social groups are similar to those in the Delta. See discussion under Delta Region.

Water Use Efficiency Program

The anticipated impacts of the water use efficiency program on social groups are similar to those in the Delta. See discussion under Delta Region.

Levee System Integrity Program

Not applicable.

Storage and Conveyance Facilities

Not applicable.

Sacramento River Region

A summary of the impacts in the Sacramento River Region is shown on Table 4.

Alternative 1

Ecosystem Restoration Program Plan

The ERPP could result in conversion or idling of up to 50,000 acres of agricultural land in the Sacramento River Region. The impacts to social groups would be similar in character to those described for the Delta Region. The potential impacts on jobs is discussed in detail in the Technical Appendix on Regional Economics.

Water Quality Program

The anticipated impacts of the water quality program on social groups are similar to those in the Delta. See discussion under Delta Region.

Water Use Efficiency Program

The anticipated impacts of the water use efficiency program on social groups are similar to those in the Delta. See discussion under Delta Region.

Levee System Integrity Program

Not applicable.

Storage and Conveyance Facilities

Farmers. Additional water provided in Alternative 1c could result positive impacts to farmers in the form of the development of additional acreage shifted from the Delta due to land conversion, or changes to higher water use and higher value crops.

Farmworkers and Agribusiness. Additional jobs may become available if additional acreage is developed.

Alternative 2

Ecosystem Restoration Program Plan

The impacts to social groups for Alternative 2 would be similar to those described for Alternative 1. The potential impacts on jobs is discussed in detail in the Technical Appendix on Regional Economics.

Water Use Efficiency Program

The anticipated impacts of the water use efficiency program on social groups are similar to those in the Delta. See discussion under Delta Region.

Levee System Integrity Program

Not applicable.

Storage and Conveyance Facilities

Farmers. Alternatives 2a and 2c would yield an additional about 4,000 AF/water per year for the Sacramento River Region, and 2b, 2d and 2e would yield about 160,000 AF/year. The impacts of this additional water supply could include the development of additional acreage, increased water supply reliability resulting in greater farm investments, and shifts to higher water use and higher value crops. The extent of this positive impact varies and is dependent on the ultimate cost of the water as discussed in the Technical Appendix on Agricultural Economics.

Development of the storage and conveyance facilities in Alternatives 2b, 2d and 2e, depending on the location could require the conversion of some agricultural lands resulting in a potentially significant impact to some farmers. This impact could be offset by shifting acreage to other parts of the Sacramento River Region.

Farmworkers and Agribusiness. Impacts to farmworkers would depend on new acreage developed by farmers. Alternatives 2a and 2c would likely result in minimal new jobs, however, Alternatives 2b, 2d and 2e could result in a significant number of jobs and a positive impact to the farmworker social group as well as associate agricultural businesses.

Recreationists and Recreation Workers.

Alternatives 2b, 2d and 2e could have significant negative or positive impacts to recreationists and recreation workers depending on the location, configuration and operation of new facilities. If new storage facilities inundate existing facilities without relocating or replacing them in-kind, adverse impacts would result. However, if new facilities provide improved recreation facilities and additional facilities over the existing condition, then additional jobs

would be provided for recreation workers and additional recreation opportunities would become available to recreationists.

Alternative 3

Ecosystem Restoration Program Plan

The impacts to social groups for Alternative 3 would be similar to those described for Alternative 1. The potential impacts on jobs is discussed in detail in the Technical Appendix on Regional Economics.

Water Use Efficiency Program

The anticipated impacts of the water use efficiency program on social groups are similar to those in the Delta. See discussion under Delta Region.

Levee System Integrity Program

Not applicable.

Storage and Conveyance Facilities

Farmers. Alternatives 3a and 3c would yield an additional about 7,000 AF/water per year for the Sacramento River Region, and 3b, 3d - 3i would yield about 160,000 AF/year. The impacts of this additional water supply could include the development of additional acreage, increased water supply reliability resulting in greater farm investments, and shifts to higher water use and higher value crops. The extent of this positive impact varies and is dependent on the ultimate cost of the water as discussed in the Technical Appendix on Agricultural Economics.

Development of the storage and conveyance facilities in Alternatives 3b, and 3d-3i, depending on the location could require the conversion of some agricultural lands resulting in a potentially significant impact to some farmers. This impact could be offset by shifting acreage to other parts of the Sacramento River Region.

Farmworkers and Agribusiness. Impacts to farmworkers would depend on new acreage developed by farmers. Alternatives 3a and 3c

would likely result in minimal new jobs, however, Alternatives 3b and 3d-3i could result in a significant number of new jobs and a positive impact to the farmworker social group as well as associate agricultural businesses.

Recreationists and Recreation Workers.

Alternatives 3b and 3d-3i could have a significant negative or positive impacts to recreationists and recreation workers depending on the location, configuration and operation of new facilities. If new storage facilities inundate existing facilities without relocating or replacing them in-kind, adverse impacts would result. However, if new facilities provide improved recreation facilities and additional facilities over the existing condition, then additional jobs would be provided for recreation workers and additional recreation opportunities would become available to recreationists.

San Joaquin River Region

A summary of the impacts in the San Joaquin River Region is shown on Table 5.

Alternative 1

Ecosystem Restoration Program Plan

The ERPP could result in conversion or idling of up to 50,000 acres of agricultural land in the San Joaquin River Region. The impacts to social groups would be similar in character to those described for the Delta Region. The potential impacts on jobs is discussed in detail in the Technical Appendix on Regional Economics.

Water Quality Program

The anticipated impacts of the water quality program on social groups are similar to those in the Delta. See discussion under Delta Region.

Water Use Efficiency Program

The anticipated impacts of the water use efficiency program on social groups are similar to those in the Delta. See discussion under Delta Region.

Levee System Integrity Program

Not applicable.

Storage and Conveyance Facilities

Farmers. In the San Joaquin River Region Alternative 1c would provide an average of up to 250,000 AF of additional supply. The impacts of this additional water supply could include the development of additional acreage, increased water supply reliability resulting in greater farm investments, and shifts to higher water use and higher value crops.

Farmworkers and Agribusiness. A significant amount of jobs could become available if additional acreage or higher labor demand crops are developed.

Alternative 2

Ecosystem Restoration Program Plan

The impacts to social groups for Alternative 2 would be similar to those described for Alternative 1. The potential impacts on jobs is discussed in detail in the Technical Appendix on Regional Economics.

Water Use Efficiency Program

The anticipated impacts of the water use efficiency program on social groups are similar to those in the Delta. See discussion under Delta Region.

Levee System Integrity Program

Not applicable.

Storage and Conveyance Facilities

Farmers. Alternatives 2a and 2c would yield an additional about 70,000 AF/water per year for the San Joaquin River Region, and 2b, 2d and 2e would yield about 250,000 AF/year. The impacts of this additional water supply could include the development of additional acreage, increased water supply reliability resulting in greater farm investments, and shifts to higher water use and higher value crops. The extent of this positive impact varies and is dependent on the ultimate cost of the water as discussed in the

Technical Appendix on Agricultural Economics.

Development of the storage and conveyance facilities in Alternatives 2b, 2d and 2e, depending on the location could require the conversion of some agricultural lands resulting in a potentially significant impact to some farmers. This impact could be offset by shifting acreage to other parts of the San Joaquin River Region.

Farmworkers and Agribusiness. Impacts to farmworkers would depend on new acreage developed by farmers. Alternatives 2a and 2c would likely result in several new jobs, however, Alternatives 2b, 2d and 2e could result in a significant number of jobs and a positive impact to the farmworker social group as well as associated agricultural businesses.

Recreationists and Recreation Workers.

Alternatives 2b, 2d and 2e could have significant negative or positive impacts to recreationists and recreation workers depending on the location, configuration and operation of new facilities. If new storage facilities inundate existing facilities without relocating or replacing them in-kind, adverse impacts would result. However, if new facilities provide improved recreation facilities and additional facilities over the existing condition, then additional jobs would be provided for recreation workers and additional recreation opportunities would become available to recreationists.

Alternative 3

Ecosystem Restoration Program Plan

The impacts to social groups for Alternative 3 would be similar to those described for Alternative 1. The potential impacts on jobs is discussed in detail in the Technical Appendix on Regional Economics.

Water Use Efficiency Program

The anticipated impacts of the water use efficiency program on social groups are similar to those in the Delta. See discussion under Delta Region.

Levee System Integrity Program

Not applicable.

Storage and Conveyance Facilities

Farmers. Alternatives 3a and 3c would yield an additional about 108,000 AF/water per year for the San Joaquin River Region, and 3b, 3d - 3i would yield about 264,000 AF/year. The impacts of this additional water supply could include the development of additional acreage, increased water supply reliability resulting in greater farm investments, and shifts to higher water use and higher value crops. The extent of this positive impact varies and is dependent on the ultimate cost of the water as discussed in the Technical Appendix on Agricultural Economics.

Development of the storage and conveyance facilities in Alternatives 3b, and 3d-3i, depending on the location could require the conversion of some agricultural lands resulting in a potentially significant impact to some farmers. This impact could be offset by shifting acreage to other parts of the San Joaquin River Region.

Farmworkers and Agribusiness. Impacts to farmworkers would depend on new acreage developed by farmers. Alternatives 3a and 3c would likely result in minimal new jobs, however, Alternatives 3b and 3d-3i could result in a significant number of new jobs and a positive impact to the farmworker social group as well as associate agricultural businesses.

Recreationists and Recreation Workers. Alternatives 3b and 3d-3i could have a significant negative or positive impacts to recreationists and recreation workers depending on the location, configuration and operation of new facilities. If new storage facilities inundate existing facilities without relocating or replacing them in-kind, adverse impacts would result. However, if new facilities provide improved recreation facilities and additional facilities over the existing condition, then additional jobs would be provided for recreation workers and additional recreation opportunities would become available to recreationists.

SWP and CVP Service Areas Outside

Central Valley

A summary of the impacts in this Region is shown on Table 6.

Alternative 1

Ecosystem Restoration Program Plan

Impacts from the ERPP in the SWP and CVP Service Area Outside the Central Valley are expected to be minor.

Water Quality Program

The anticipated impacts of the water quality program on social groups are similar to those in the Delta. See discussion under Delta Region.

Water Use Efficiency Program

The anticipated impacts of the water use efficiency program on social groups are similar to those in the Delta. See discussion under Delta Region.

Levee System Integrity Program

Not applicable.

Storage and Conveyance Facilities

Farmers. In this Region Alternative 1c could provide an average of up to 16,000 AF of additional supply. The impacts of this additional water supply could include the development of additional acreage, increased water supply reliability resulting in greater farm investments, and shifts to higher water use and higher value crops.

Farmworkers and Agribusiness. A significant amount of jobs could become available if additional acreage or higher labor demand crops are developed.

Alternative 2

Ecosystem Restoration Program Plan

The impacts to social groups for Alternative 2 would be similar to those described for

Alternative 1.

Water Use Efficiency Program

The anticipated impacts of the water use efficiency program on social groups are similar to those in the Delta. See discussion under Delta Region.

Levee System Integrity Program

Not applicable.

Storage and Conveyance Facilities

Farmers. Alternatives 2a and 2c would yield an additional about 5,000 AF/water per year for this region and 2b, 2d and 2e would yield about 16,000 AF/year. The impacts of this additional water supply could include the development of additional acreage, increased water supply reliability resulting in greater farm investments, and shifts to higher water use and higher value crops. The extent of this positive impact varies and is dependent on the ultimate cost of the water as discussed in the Technical Appendix on Agricultural Economics.

Farmworkers and Agribusiness. Impacts to farmworkers would depend on new acreage developed by farmers. Alternatives 2a and 2c would likely result in some new jobs, however, Alternatives 2b, 2d and 2e could result in a significant number of jobs and a positive impact to the farmworker social group as well as associated agricultural businesses.

Alternative 3

Ecosystem Restoration Program Plan

The impacts to social groups for Alternative 3 would be similar to those described for Alternative 1. The potential impacts on jobs is discussed in detail in the Technical Appendix on Regional Economics.

Water Use Efficiency Program

The anticipated impacts of the water use efficiency program on social groups are similar

to those in the Delta. See discussion under Delta Region.

Levee System Integrity Program

Not applicable.

Storage and Conveyance Facilities

Farmers. Alternatives 3a and 3c would yield an additional about 7,000 AF/water per year for this Region, and 3b, 3d - 3i would yield about 17,000 AF/year. The impacts of this additional water supply could include the development of additional acreage, increased water supply reliability resulting in greater farm investments, and shifts to higher water use and higher value crops. The extent of this positive impact varies and is dependent on the ultimate cost of the water as discussed in the Technical Appendix on Agricultural Economics.

Farmworkers and Agribusiness. Impacts to farmworkers would depend on new acreage developed by farmers. Alternatives 3a and 3c would likely result in minimal new jobs, however, Alternatives 3b and 3d-3i could result in a significant number of new jobs and a positive impact to the farmworker social group as well as associate agricultural businesses.

6.0 RELATED TOPICS

The assessment of impacts to social groups and low-income and minority groups is directly linked to the potential impacts to agriculture and regional economics. These impacts are addressed in the Technical Appendices on Agricultural Economics and Regional Economics. Additionally, impacts to agricultural lands are addressed in the Land Use Technical Appendix and the Flood Control Economics Technical Appendix. Impacts of changes in agricultural production on jobs, income and the regional economy are described in the Regional Economics Technical Report.

7.0 REFERENCES

Ecosystem Restoration Program Plan - Executive Summary and Tables Working Draft, CALFED Bay-Delta Program, April 8, 1997.

Environmental Setting - Affected Environment Technical Report (by resource category), DRAFT OUTLINE, April 18, 1997.

Facility Descriptions and Updated Cost Estimates for Thomes-Newville Reservoir Project, prepared by the CALFED Storage and Conveyance Refinement Team, April 25, 1997.

Facility Descriptions and Updated Cost Estimates for Shasta Lake Enlargement, prepared by the CALFED Storage and Conveyance Refinement Team, February 12, 1997.

Facility Descriptions and Updated Cost Estimates for Lake Berryessa Enlargement, prepared by the CALFED Storage and Conveyance Refinement Team, March 18, 1997.

Facility Descriptions and Updated Cost Estimates for Cottonwood Creek Reservoir Complex, prepared by the CALFED Storage and Conveyance Refinement Team, March 14, 1997.

Facility Descriptions and Updated Cost Estimates for Tehama-Colusa Canal Extension, prepared by the CALFED Storage and Conveyance Refinement Team, April 24, 1997.

Impact Significance Thresholds Report -- DRAFT, Initial Review Draft Report, CALFED Bay-Delta Program, August 27, 1996.

Phase II Alternative Descriptions, CALFED Bay-Delta Program, DRAFT - May 8, 1997.

Project Descriptions and Updated Cost Estimates for Red Bank Project, prepared by the CALFED Storage and Conveyance Refinement Team, April 30, 1997.

Project Descriptions and Updated Cost Estimates for Sites/Colusa Reservoir Project, prepared by the CALFED Storage and Conveyance Refinement Team, March 25, 1997.

Summary of Common Programs -- DRAFT, Appendix B, CALFED Bay-Delta Program, April 22, 1997.

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