Section 16
Population and Housing

This section addresses population and housing in the Delta and Suisun Marsh (Delta), and the Delta watershed and areas outside the Delta that use Delta water. It describes the environmental setting, environmental impacts, and proposed mitigation measures. Certain topics discussed in this section, such as land cover, overlap with topics discussed in other sections of this Environmental Impact Report (EIR); see Section 6, Land Use and Planning, and Section 7, Agriculture and Forestry Resources, for additional information.

The Delta Plan (the Proposed Project) does not propose implementation of any particular physical project; rather it seeks to influence, either through limited policy regulation or through recommendations, other agencies to take certain actions that will lead to achieving the dual goals of Delta ecosystem protection and water supply reliability. Those actions, if taken, could lead to physical changes in the environment. This is described in more detail in part 2.1 of Section 2A, Proposed Project and Alternatives, and in Section 2B, Introduction to Resource Sections.

The types of changes that could impact population and housing include land use changes; conversion of agricultural lands, wetland and other habitat types; land fallowing, levee construction or reconfiguration; and construction or reconstruction of water and wastewater treatment plants, conveyance facilities and pumping plants, surface water and groundwater storage facilities, ecosystem restoration projects, and recreation facilities. These types of activities could affect the extent and location of population and housing. It is unlikely that the Proposed Project would result in substantial population growth in an area, or displace substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere.

16.1 Study Area

The population and housing study area consists of the Delta and Suisun Marsh (Delta), the Delta watershed, and areas outside the Delta that use water from the Delta. Since the study area comprising the Delta watershed and areas outside the Delta that use Delta water is large, it was further split into groups of counties receiving State Water Project (SWP) and Central Valley Project (CVP) water in large areas of the Central Valley, Bay Area, Southern California, and other regions that may be affected by potential changes in water project operations resulting from changes to the Delta arising from Delta Plan implementation. Table 16-1 shows the counties in each of the regions in the study area. As described in Section 2A, Proposed Project and Alternatives, facilities could be constructed, modified, or reoperated in the Delta or the Delta watershed and areas located outside the Delta that use Delta water. It is unclear where actions would be located. For this analysis, these counties have been grouped into the following regions: Sacramento Valley, San Joaquin Valley, Bay Area, Central Coast, and South Coast.

Table 16-1
Counties in Each Region in the Study Area

Study Area	Region	Counties
Delta and Suisun Marsh	Delta	Sacramento, Yolo, Solano, San Joaquin, Contra Costa
Delta watershed and areas outside the Delta that use water from the Delta	Sacramento Valley	Butte, Colusa, El Dorado, Glenn, Placer, Sacramento,* Shasta, Solano,* Sutter, Tehama, Yolo,* Yuba
	San Joaquin Valley	Alpine, Amador, Calaveras, Fresno, Madera, Mariposa, Merced, San Joaquin,* Stanislaus, Tuolumne, Kern, Kings, Tulare
	Bay Area	Alameda, Contra Costa,* Marin, Napa, San Benito, San Francisco, San Mateo, Santa Clara
	Central Coast	Monterey, San Luis Obispo, Santa Barbara, Santa Cruz
	South Coast	Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura

* Portions of these counties are also inside the Delta and Suisun Marsh region.

16.2 Regulatory Framework

Appendix D provides an overview of the local, State, and federal plans, policies, and regulations relating to population and housing within the study area.

16.3 Environmental Setting

This section describes the population and housing conditions of the Delta and Suisun Marsh to establish a thorough understanding of the environmental setting in this region. This section also describes, in broad terms, the environmental setting as it relates to population and housing in the Delta watershed and areas outside the Delta that use Delta water.

16.3.1 Major Sources of Information

Data for the regional setting were compiled from publically available data sets published by State and federal agencies, such as the California Department of Finance (DOF), and the U.S. Census. Additional sources of information are listed in the Section 16.5.

16.3.2 Delta and Suisun Marsh

This section describes existing population and housing in the Delta and Suisun Marsh. The Delta and Suisun Marsh have a distinctive social, cultural, and natural heritage that reflects a long history of agricultural production, agriculture-related industry, water supply and flood control engineering, and urbanization. The Delta and Suisun Marsh includes about a half-million acres of agriculture and a network of water infrastructure including canals, sloughs, pipelines, and aboveground transmission lines serving and connecting the Delta to the San Francisco Bay, Sacramento, and Southern California.

The Delta is a maze of islands and channels at the confluence of the Sacramento and San Joaquin rivers. It encompasses communities in Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties.[1] Seventeen incorporated cities are located in the Delta and Suisun Marsh: Sacramento, Isleton, Elk Grove, West Sacramento, Rio Vista, Fairfield, Benicia, Suisun City, Pittsburg, Antioch, Oakley, Brentwood, Stockton, Lathrop, Manteca, Tracy, and Lodi. Most of the population resides on the fringe of the Delta, with the highest concentration of people in the urban centers of Antioch and Pittsburg to the west, Stockton and Tracy to the southeast, and Sacramento to the north.

16.3.2.1 Population

The following describes the population and housing characteristics in the Delta and Suisun Marsh for counties and incorporated communities within those counties.

16.3.2.1.1 Sacramento County

The Delta lies in the southwestern region of the county. Communities within Sacramento County that overlap the Delta include Courtland, Elk Grove, Freeport, Hood, Isleton, Locke, Sacramento, and Walnut Grove. Most of the county population resides in Sacramento and its suburbs outside the Delta and thus outside the Delta and Suisun Marsh region. Isleton is the only incorporated community that is entirely within the Delta and Suisun Marsh study area. The 2010 population estimates in Isleton, Elk Grove and Sacramento were 804, 143,885 and 486,190, respectively (DOF 2011a; DOF 2011b; US Census 2010). Table 16-2 shows the historical, current and projected population of Sacramento County and communities/cities within the county that are in the Delta. The population of Sacramento County includes both incorporated and unincorporated communities within the county.

Table 16-2
Population: Historical, Existing, and Projected, Delta and Suisun Marsh[a]

County and Community[b]	1990[c]	2000[c]	2010[d]	2020[e]	2030[e]	2040[e]	2050[e]
Sacramento	1,041,219	1,223,499	1,445,327	1,622,306	1,803,872	1,989,221	2,176,508
Sacramento	369,365	407,018	486,189	NA	NA	NA	NA
Elk Grove[f]	NA	NA	143,885	NA	NA	NA	NA
Isleton	833	828	822	NA	NA	NA	NA
Yolo	141,210	168,660	202,953	245,052	275,360	301,934	327,982
West Sacramento	28,898	31,615	48,426	NA	NA	NA	NA
Clarksburg	NA	NA	418[g]	NA	NA	NA	NA
Solano	339,471	394,930	427,837	503,248	590,166	697,206	815,524
Rio Vista	3,316	4,571	8,324	NA	NA	NA	NA
Suisun City	22,704	26,118	28,962	NA	NA	NA	NA
Fairfield	78,650	96,178	105,955	NA	NA	NA	NA
Benicia	24,437	26,865	28,086	NA	NA	NA	NA
San Joaquin[h]	480,628	563,598	694,293	965,094	1,205,198	1,477,473	1,783,973
Stockton	210,943	243,771	292,133	348,977	404,840	NA	NA
Lathrop	6,841	10,445	17,969	23,747	27,133	NA	NA

[1] A very small, unpopulated portion of Alameda County overlaps the Delta; Alameda County is therefore not considered in this description and analysis of population-related impacts.

Table 16-2
Population: Historical, Existing, and Projected, Delta and Suisun Marsh[a]

County and Community[b]	1990[c]	2000[c]	2010[d]	2020[e]	2030[e]	2040[e]	2050[e]
Manteca	40,773	49,255	68,847	87,471	107,766	NA	NA
Tracy	33,558	56,929	82,107	103,456	122,790	NA	NA
Contra Costa	803,732	948,816	1,073,055	1,237,544	1,422,840	1,609,257	1,812,242
Pittsburg	47,607	56,769	64,967	NA	NA	NA	NA
Antioch	62,195	90,532	102,330	NA	NA	NA	NA
Oakley	NA	25,619	35,646	NA	NA	NA	NA
Brentwood	7,563	23,302	52,492	NA	NA	NA	NA
California	29,758,213	33,873,086	38,648,090	44,135,923	49,240,891	54,266,115	59,507,876

[a] Population estimates shown are for entire counties/communities, not just for portions within the Delta region.
[b] The portion of the Delta in Alameda County is not included because it has no residents.
[c] DOF 2011a
[d] DOF 2011b
[e] DOF 2011c
[f] Elk Grove was incorporated on July 1, 2000; therefore, there are no population estimates for 1990 and 2000.
[g] US Census 2010.
[h] 2020 data for cities in San Joaquin County from 2011 San Joaquin Council of Governments (SJCOG) Regional Transportation Plan (SJCOG 2011).
NA: not available

16.3.2.1.2 Yolo County

The southeastern portion of Yolo County lies within the Delta. The communities within Yolo County that overlap the Delta are Clarksburg and West Sacramento. Of these, West Sacramento is the only incorporated city. In 2010, the population of West Sacramento was about 48,430 residents, while that of Yolo County, which includes both incorporated and unincorporated communities, was about 202,950 (DOF 2011a; 2011b). The 2010 population estimate for Clarksburg was 418 (US Census, 2010). Table 16-2 shows the historical, current and projected population of Yolo County and communities/cities within the county that are in the Delta.

16.3.2.1.3 Solano County

Located approximately 45 miles northeast of San Francisco and 45 miles southwest of Sacramento, Solano County is a mix of agricultural and suburban areas. The southeastern part of Solano County lies within the Delta. Rio Vista, Suisun City, Fairfield, and Benicia are the only four incorporated communities in Solano County identified in this analysis that are within the Delta and Suisun Marsh region. In 2010, the population of Solano County was about 427,840, with approximately 8,320 residing in Rio Vista, 28,960 in Suisun City, 105,960 in Fairfield, and 28,090 in Benicia (DOF 2011a; 2011b). Table 16-2 shows the historical, current and projected population of Solano County and communities/ cities within the county that are in the Delta. The population of Solano County includes both incorporated and unincorporated communities within the county.

16.3.2.1.4 San Joaquin County

More of the Delta lies within San Joaquin County than in any other county. The incorporated communities within San Joaquin County that are in the Delta and Suisun Marsh region include Stockton, Lathrop, Manteca, and Tracy. In 2010, the San Joaquin County population, which includes both incorporated and unincorporated communities, was about 694,300. The populations of the cities of

Stockton, Lathrop, Manteca, and Tracy were approximately 292,130, 17,970, 68,850 and 82,850, respectively (DOF 2011a; 2011b). Table 16-2 shows the historical, current, and projected population of San Joaquin County and communities/cities within the county that are in the Delta.

16.3.2.1.5 Contra Costa County

In Contra Costa County, nine communities lie wholly or partly within the Delta. These communities are Antioch, Bay Point, Bethel Island, Brentwood, Byron, Discovery Bay, Knightsen, Oakley, and Pittsburg. Of these, the incorporated communities in the Delta and Suisun Marsh region are Pittsburgh, Antioch, Oakley, and Brentwood. The 2010 estimated populations for these incorporated communities were 64,970 in Pittsburg; 102,330 in Antioch; 35,650 in Oakley; and 52,490 in Brentwood (DOF 2011a; 2011b). Table 16-2 shows the historical, current and projected population of Contra Costa County and communities/cities within the county that are in the Delta. The population of Contra Costa County includes both incorporated and unincorporated communities within the county.

16.3.2.1.6 Population Summary

Historical, current, and projected population estimates for the counties and cities/communities within the Delta and Suisun Marsh region are summarized in Table 16-2. Historically, the population in the counties within Delta and Suisun Marsh region accounted for about 10 percent of the state population, and this proportion is expected to continue through 2020 and rise slightly in the following decades. Table 16-3 shows the historical and projected average annual population growth rates for the counties and cities/communities within the Delta and Suisun Marsh region. San Joaquin County had the highest population growth rate (2.1 percent) between 2000 and 2010 and is projected to continue to outgrow, at 3.3 percent, the other counties during the 2010-2020 period. Although Solano County's population growth rate declined between 2000 and 2010 from what it had been in the previous decade, its projected growth rate during the current (2010-2020) decade is expected to parallel that of the 1990s. Of the communities shown in the table, Brentwood had the highest (at 11.9 percent) average annual growth rate between 1990 and 2000. Tracy had the second highest growth rate (at 5.6 percent) while Lathrop, at 3.8 percent, had the third highest population growth rate. Isleton had a negligible decline (-0.1 percent), while West Sacramento's population grew by only 0.9 percent. Between 2000 and 2010, Brentwood continued to experience the highest growth rate (8.5 percent) among all the communities; Rio Vista's population grew by 6.2 percent and Lathrop's by 5.6 percent. There was no change in Isleton's population growth. Population growth in all regions is expected to slow down during the 2020-2030 period and subsequent decades.

Table 16-3
Historical and Projected Average Annual Compounded Population Growth Rates

County and Community*	1990–2000	2000–2010	2010–2020	2020–2030	2030–2040	2040–2050
Sacramento	1.6	1.7	1.2	1.1	1.0	0.9
Sacramento	1.0	1.8	NA	NA	NA	NA
Elk Grove	NA	NA	NA	NA	NA	NA
Isleton	-0.1	-0.1	NA	NA	NA	NA
Yolo	1.8	1.9	1.9	1.2	0.9	0.8
West Sacramento	0.9	4.4	NA	NA	NA	NA
Clarksburg	NA	NA	NA	NA	NA	NA
Solano	1.5	0.8	1.6	1.6	1.7	1.6
Rio Vista	3.3	6.2	NA	NA	NA	NA
Suisun City	1.4	1.0	NA	NA	NA	NA

Table 16-3
Historical and Projected Average Annual Compounded Population Growth Rates

County and Community*	1990–2000	2000–2010	2010–2020	2020–2030	2030–2040	2040–2050
Fairfield	2.0	1.0	NA	NA	NA	NA
Benicia	1.0	0.4	NA	NA	NA	NA
San Joaquin	1.6	2.1	3.3	2.2	2.1	1.9
Stockton	1.5	1.8	1.8	NA	NA	NA
Lathrop	4.3	5.6	2.8	NA	NA	NA
Manteca	1.9	3.4	2.4	NA	NA	NA
Tracy	5.4	3.7	2.3	NA	NA	NA
Contra Costa	1.7	1.2	1.4	1.4	1.2	1.2
Pittsburg	1.8	1.4	NA	NA	NA	NA
Antioch	3.8	1.2	NA	NA	NA	NA
Oakley	NA	3.4	NA	NA	NA	NA
Brentwood	11.9	8.5	NA	NA	NA	NA
California	1.3	1.3	1.3	1.1	1.0	0.9

* The portion of the Delta in Alameda County is not included because it has no residents.
NA: not applicable

Historical and projected population estimates for specific Delta islands are summarized in Table 16-4. Byron Tract, which includes Discovery Bay, had the highest population estimate at 6,211 in 2000 and is projected to have a population of 7,818 in 2030. Bethel and Brannan-Andrus islands had the second and third highest population estimates: 2,312 for Bethel and 1,837 for Brannan-Andrus in 2000. Population estimates in 2000 were less than 10 persons in Coney, Deadhorse, Jersey, Prospect, Venice Webb, and the Wright-Elmwood Tract islands.

Table 16-4
Population: Historical and Projected, Delta Islands

Island	1990	2000	2030
Bacon Island	260	180	180
Bethel Island	2,115	2,312	3,337
Bishop Tract	52	17	5,754
Bouldin Island	74	0	0
Brack Tract	80	21	21
Bradford Island	0	48	48
Brannan-Andrus Island	2,093	1,837	2,829
Browns Island			
Byron Tract (includes Discovery Bay)	6,336	6,211	7,818
Canal Ranch	103	0	0
Clifton Court Forebay	16	27	27
Coney Island	0	8	8
Deadhorse Island	39	4	4

Table 16-4
Population: Historical and Projected, Delta Islands

Island	1990	2000	2030
Decker Island	0	0	0
Discovery Bay			
Empire Tract	5	38	54
Fabian Tract	130	173	642
Fay Island		0	0
Granville Tract		60	74
Grand Island	1,021	1,174	1,355
Hastings Tract	94	50	50
Holland Tract	35	27	27
Hotchkiss Tract	847	968	1,583
Jersey Island	13	8	8
Jones Tract	112	29	289
Upper Jones Tract	46		
Kimball Island	0	0	0
King Island	195	237	338
Mandeville Island	118	0	0
McCormack-Williamson Tract	0	0	0
McDonald Tract	95	103	103
Medford Island	14	23	23
Merritt Island	238	211	314
Netherlands		1,027	1,181
New Hope Tract	1,376	1,108	1,613
Palm-Orwood North	98	353	353
Palm-Orwood South	16		
Pierson District	355	819	980
Prospect Island		2	2
Quimby Island		0	0
Ridge Tract	33	44	132
Rio Blanco Tract	10	0	0
Roberts Island	221	887	1,678
Roberts Island 2	435		
Roberts Island 3	231		
Rough and Ready Island	174	0	48
Ryer Island	246	287	333
Sargent Barnhart Tract	1,902	4,664	11,674
Sherman Island	233	224	228
Shima Tract	101	0	3,400
Shin Kee Tract	8	0	0
Staten Island	35	40	50

Table 16-4
Population: Historical and Projected, Delta Islands

Island	1990	2000	2030
Stewart Tract	213	37	16,500
Sutter Island	173	121	121
Terminous Tract	602	763	1,262
Twitchell Island	87	115	130
Tyler Island	644	540	676
Union Island	779	536	1,502
Veale Tract	4	63	81
Venice Island	0	4	4
Victoria Island	155	188	188
Webb Tract	0	2	2
Woodward Island	6	0	0
Wright-Elmwood Tract	31	2	2

Source: DWR 2008.

16.3.2.2 Housing

Table 16-5 shows the distribution of total housing units in each of the Delta counties and in California. Data used to characterize housing (number of units, single-family, multifamily, etc.) is from the DOF, which collects these data at the county level and revises them annually. The data include both the incorporated and unincorporated communities in each county. Similar data also are available from the U.S. Census American Community Survey; however, these data typically lag by 2 years. As of January 1, 2010 (DOF 2011b), there were 1.4 million housing units within Delta counties, representing 10.4 percent of the housing units in the state. Sacramento County, with the largest population, also contained the most housing units in 2010, followed by Contra Costa County. Yolo County, with the smallest population, also had the fewest housing units at 74,224 units. Recent growth in the number of housing units has been greatest in San Joaquin County, where total housing units increased by 21.5 percent between 2000 and 2010. Contra Costa County registered the lowest increase in housing units between 2000 and 2010, at slightly less than 13 percent. These patterns are consistent with the population growth discussed previously.

Table 16-5
Total Housing Units, Delta and Suisun Marsh, 1990–2010[a]

	Number of Units			Percentage Change	
County[b]	1990[c]	2000[c]	2010[d]	1990–2000	2000–2010
Sacramento	417,574	474,814	556,208	13.7%	17.1%
Yolo	53,028	61,587	74,224	16.1%	20.5%
Solano	119,136	134,513	153,280	12.9%	14.0%
San Joaquin	166,274	189,160	229,827	13.8%	21.5%
Contra Costa	316,170	354,577	400,268	12.1%	12.9%
Total in studied Delta counties	1,072,182	1,214,651	1,413,807	13.3%	16.4%
California	11,182,513	12,214,550	13,591,866	9.2%	11.3%

Table 16-5
Total Housing Units, Delta and Suisun Marsh, 1990–2010[a]

County[b]	Number of Units			Percentage Change	
	1990[c]	2000[c]	2010[d]	1990–2000	2000–2010

[a] Housing units shown are for entire counties and not just for portions of counties within the Delta region.
[b] The portion of the Delta in Alameda County is not included because it has no residents.
[c] DOF 2011a
[d] DOF 2011b

Housing density varies greatly across the Delta region, corresponding to the variation in population density. Some Delta islands contain fewer than five housing units. As a result, substantial areas within the Delta contain fewer than five housing units per square mile (DWR 2008). In contrast, cities that are wholly or partly within the Delta, such as Sacramento and Stockton, contain more than 1,000 housing units per square mile. The housing density of small communities within the Delta generally falls in between these extremes; Rio Vista, for example, contains about 290 housing units per square mile (U.S. Census Bureau 2000).

Table 16-6 shows housing type trends by county and incorporated community between 1990 and 2010. Within the Delta and Suisun Marsh region, Sacramento County had the highest number of single family and multifamily homes. In 2010, Sacramento County had 391,958 single family and 148,453 multifamily homes. Yolo County had the fewest single family and multifamily homes during the period, with 48,012 single family units and 22,484 multifamily units in 2010. The table also shows vacancy rates for the counties and communities. Housing availability, as measured by vacancy rates, was below the 5 percent generally considered to be a healthy rate in all but Isleton and Sacramento. Thus, based on the 2010 data, housing is in short supply in the Delta region.

16.3.3 Delta Watershed and Areas Outside the Delta That Use Delta Water

The Delta watershed extends across a broad area encompassing about 28,372,783 acres, not including the Delta, and areas outside the Delta that use Delta water (24,120,000 acres) cover approximately 52 percent of the land in the state. The southern portion of the watershed includes major population centers along Interstate 5 and State Route 99 in the Central Valley, such as Merced, Modesto, and Turlock.

16.3.3.1 Population

Historical, current, and projected population estimates for the regions within the Delta watershed and areas outside the Delta that use Delta water are summarized in Table 16-7 Historically, the South Coast region had the highest population concentration, with about 60 percent of the total state population and about 65 percent of the population within the Delta watershed and areas outside the Delta that use Delta water. About 20 percent of the population in the Delta watershed and areas outside the Delta that use Delta water resides in the Bay Area and San Joaquin Valley regions. The population in the Central Coast region accounts for about 4 percent of the population in the Delta watershed and areas outside the Delta that use Delta water, while that of the Sacramento Valley region accounts for less than 9 percent. The Bay Area and San Joaquin Valley regions account for about 18 percent, while the Central Coast and Sacramento Valley regions account for about 4 percent and 9 percent, respectively, of the population in the Delta watershed and areas outside the Delta that use Delta water. By 2020, the proportion of the population within each of the regions within the Delta watershed and areas outside the Delta that use Delta water study area will continue to be about the same as it has been in the past. By 2050, the proportion of the population in the Bay Area and San Joaquin regions is projected to decline to 15 percent, while that in the Central Coast and Sacramento Valley is expected to increase slightly to 10 percent of the population in the Delta watershed and areas outside the Delta that use Delta water.

Table 16-6
Housing Type Trends by County and Selected Communities, Delta and Suisun Marsh,1990–2010[a]

County and Community[b]	1990[c]			2000[c]			2010[d]		
	Family Housing Type		Vacancy Rate	Family Housing Type		Vacancy Rate	Family Housing Type		Vacancy Rate
	Single	Multiple		Single	Multiple		Single	Multiple	
Sacramento	278,744	123,913	5.52%	329,308	130,022	4.47%	391,958	148,453	4.44%
Sacramento	98,221	51,786	5.81%	107,257	53,029	5.72%	127,660	64,100	5.72%
Elk Grove	NA	NA	NA	NA	NA	NA	44,961	3,298	2.39%
Isleton	232	74	6.82%	224	113	10.68%	223	108	10.58%
Yolo	32,431	17,070	3.83%	38,868	19,110	3.59%	48,012	22,484	3.52%
West Sacramento	7,050	3,078	5.15%	7,585	3,017	6.01%	12,787	4,311	6.01%
Clarksburg	NA	NA	NA	NA	NA	NA	NA	NA	7.69%
Solano	86,140	28,365	5.11%	101,974	27,913	3.06%	116,866	31,723	4.03%
Rio Vista	1,041	284	4.84%	1,590	274	4.71%	3,386	274	4.30%
Suisun City	5,432	1,517	4.78%	6,999	1,081	1.95%	7,965	1,267	1.95%
Fairfield	18,760	7,283	3.54%	23,444	7,434	2.90%	178,172	41,852	3.94%
Benicia	7,102	2,143	3.95%	7,856	2,365	2.08%	4,604	106	3.18%
San Joaquin	116,540	40,963	4.88%	140,524	39,445	3.98%	178,172	41,852	3.94%
Stockton	44,871	26,325	5.14%	55,680	25,074	4.25%	69,778	26,019	4.25%
Lathrop	1,636	115	5.54%	2,536	104	2.77%	4,604	106	3.18%
Manteca	10,015	3,314	3.87%	12,622	3,445	3.36%	18,662	3,737	3.36%
Tracy	9,198	2,531	7.93%	15,076	2,536	2.58%	22,027	3,093	2.58%
Contra Costa	228,792	79,966	5.02%	261,990	85,008	2.95%	298,145	94,488	2.98%
Pittsburg	11,398	4,684	6.38%	13,240	4,390	3.05%	15,805	4,570	3.04%

Table 16-6
Housing Type Trends by County and Selected Communities, Delta and Suisun Marsh,1990–2010[a]

County and Community[b]	1990[c]			2000[c]			2010[d]		
	Family Housing Type		Vacancy Rate	Family Housing Type		Vacancy Rate	Family Housing Type		Vacancy Rate
	Single	Multiple		Single	Multiple		Single	Multiple	
Antioch	17,160	5,463	6.84%	24,283	5,564	2.58%	28,016	5,861	2.58%
Oakley	NA	NA	NA	7,363	164	1.43%	10,123	560	1.54%
Brentwood	2,028	369	5.82%	6,768	672	3.74%	16,122	1,242	3.67%
California	6,930,681	3,696,537	7.17%	7,815,035	3,829,827	5.83%	8,747,293	4,247,635	5.90%

[a] Estimates shown are for entire counties and communities and not just the portions within the Delta region.
[b] The portion of the Delta in Alameda County is not included because it has no residents.
[c] DOF 2011a
[d] DOF 2011b

Table 16-7
Population: Historical, Existing, and Projected in the Delta Watershed and Areas Outside the Delta That Use Delta Water

Region	1990[e]	2000[e]	2010[f]	2020[g]	2030[g]	2040[g]	2050[g]
Sacramento Valley[a]	2,363,188	2,798,659	3,298,527	3,923,515	4,517,367	5,176,205	5,872,612
San Joaquin Valley[b]	230,096	247,289	260,651	260,305	273,151	287,153	307,868
Bay Area[c]	5,329,151	5,984,038	6,597,124	7,009,634	7,616,031	8,241,007	8,863,615
Central Coast	1,172,164	1,303,392	1,415,791	1,517,160	1,634,793	1,751,971	1,878,868
South Coast	17,029,545	19,188,175	21,889,370	24,727,827	27,092,563	29,130,813	31,180,992
Total[d]	26,124,144	29,521,553	33,461,463	37,438,441	41,133,905	44,587,149	48,103,955
California	29,758,213	33,873,086	38,648,090	44,135,923	49,240,891	54,266,115	59,507,876

[a] Includes all of Sacramento, Solano and Yolo counties, including the parts that are in the Delta region.
[b] Includes all of San Joaquin County, including the part that is in the Delta region.
[c] Includes all of Contra Costa County, including the part that is in the Delta region.
[d] Includes population in all counties in the Delta watershed and areas outside the Delta that use Delta water identified in Table 16-1.
[e] DOF 2011a
[f] DOF 2011b
[g] DOF 2011c

Table 16-8 shows the average annual population growth rate in the water delivery regions by decade. Between 2000 and 2010, the population in the Delta watershed and areas outside the Delta that use Delta water grew at an average annual rate of about 1.3 percent. Among the five regions in the Delta watershed and areas outside the Delta that use Delta water, the Sacramento Valley region had the highest growth rate (1.7 percent), while the San Joaquin Valley region had the smallest growth rate (0.5 percent). The average annual population growth rate is expected to be highest in the Sacramento Valley region (1.8 percent) and lowest in the San Joaquin Valley region (-0.01 percent) during the 2010-2020 period and in the following decades as shown in Table 16-7.

Table 16-8
Historical and Projected Average Annual Compounded Population Growth Rates

Regions	1990–2000	2000–2010	2010–2020	2020–2030	2030–2040	2040–2050
Sacramento Valley[a]	1.71%	1.66%	1.75%	1.42%	1.37%	1.27%
San Joaquin Valley[b]	0.72%	0.53%	-0.01%	0.48%	0.50%	0.70%
Bay Area[c]	1.63%	1.54%	1.75%	1.48%	1.38%	1.31%
Central Coast	1.17%	0.98%	0.61%	0.83%	0.79%	0.73%
South Coast	1.07%	0.83%	0.69%	0.75%	0.69%	0.70%
Total (all regions)[d]	1.23%	1.26%	1.13%	0.95%	0.81%	0.76%
California	1.20%	1.33%	1.23%	0.92%	0.73%	0.68%

[a] Includes all of Sacramento, Solano, and Yolo counties, including the parts that are in the Delta region.
[b] Includes all of San Joaquin County, including the part that is in the Delta region.
[c] Includes all of Contra Costa County, including the part that is in the Delta region.
[d] Includes all regions in the Delta watershed and areas outside the Delta that use Delta water.

16.3.3.2 Housing

Table 16-9 shows the total housing units in each of the regions identified within the Delta watershed and areas outside the Delta that use Delta water. The estimates shown are based on county totals that include both incorporated and unincorporated communities within those counties. As expected, and in response to increasing population, housing totals have continued to increase during each of the decades. During the most recent decade (2000-2010), the San Joaquin Valley and the Sacramento Valley regions had the highest increase in total housing units at 19.4 percent and 18.9 percent, respectively while the Bay Area had the lowest, at 7.7 percent.

Table 16-9
Total Housing Units in Delta Watershed and Areas Outside the Delta That Use Delta Water, 1990–2010

Regions	Number of Units			Percentage Change	
	1990[d]	2000[d]	2010[e]	1990–2000	2000–2010
Sacramento Valley[a]	947,170	1,095,085	1,301,840	15.6%	18.9%
San Joaquin Valley[b]	1,023,758	1,183,920	1,413,714	15.6%	19.4%
Bay Area[c]	2,096,958	2,251,237	2,423,895	7.4%	7.7%
Central Coast	441,451	475,757	522,090	7.8%	9.7%
South Coast	6,239,312	6,718,293	7,383,180	7.7%	9.9%
California	11,182,513	12,214,550	13,591,866	9.2%	11.3%

[a] Includes all of Sacramento, Solano, and Yolo counties, including the parts that are in the Delta region.
[b] Includes all of San Joaquin County, including the part that is in the Delta region.
[c] Includes all of Contra Costa County, including the part that is in the Delta region.
[d] DOF 2011a
[e] DOF 2011b

Table 16-10 shows housing type trends by region between 1990 and 2010. Within the Delta watershed and areas outside the Delta that use Delta water, Sacramento and San Joaquin Valley regions have proportionately more single-family housing than the Bay Area and South Coast regions. Single-family housing units account for about 70 percent of total housing units in Sacramento and San Joaquin Valley regions and about 60 percent of total housing units in the Bay Area and South Coast regions. Housing availability, as measured by vacancy rates, was below 5 percent, generally considered to be a healthy rate in the Bay Area during the 1990 through 2010 period shown in the table. Thus, based on the vacancy rate data, housing is in short supply in the Bay Area. Based on the vacancy rates, housing is not in short supply in the other regions.

Table 16-10
Housing Type Trends by Region, Delta Watershed and Areas Outside the Delta That Use Delta Water, 1990–2010

Region	1990[d]			2000[d]			2010[e]		
	Family Housing Type		Vacancy Rate	Family Housing Type		Vacancy Rate	Family Housing Type		Vacancy Rate
	Single	Multiple		Single	Multiple		Single	Multiple	
Sacramento Valley[a]	647,527	229,647	7.81%	779,350	244,794	6.62%	943,994	281,946	6.58%
San Joaquin Valley[b]	721,228	219,607	7.81%	872,034	226,679	7.89%	1,067,452	251,295	7.76%
Bay Area[c]	1,259,480	792,004	4.85%	1,373,994	831,364	3.20%	1,455,029	922,722	3.07%
Central Coast	295,008	113,650	7.89%	327,959	115,213	7.15%	361,146	126,550	7.19%
South Coast	3,703,660	2,272,342	7.23%	4,107,487	2,337,908	5.60%	4,524,243	2,578,790	5.73%
California	6,930,681	3,696,537	7.17%	7,815,035	3,829,827	5.83%	8,747,293	4,247,635	5.90%

[a] Includes all of Sacramento, Solano, and Yolo Counties, including the parts that are in the Delta region.
[b] Includes all of San Joaquin County, including the part that is in the Delta region.
[c] Includes all of Contra Costa County, including the part that is in the Delta region.
[d] DOF 2011a
[e] DOF 2011b

16.4 Impacts Analysis of Project and Alternatives

16.4.1 Assessment Methods

The Delta Plan alternatives would not directly result in construction or operation of projects or facilities, and therefore would result in no direct population and housing impacts.

The Proposed Project and alternatives could encourage the implementation of actions or activities by other agencies to construct and operate facilities or infrastructure that are described in Sections 2A, Proposed Project and Alternatives, and 2B, Introduction to Resource Sections. Examples of potential actions that could affect population and housing include land use changes, including land fallowing, or development of projects, such as new regional and local water supply facilities, water storage projects, levee-strengthening projects, and related infrastructure that are designed to create a more-reliable water supply in California and to protect communities from flooding. Other projects that may be encouraged by the Proposed Project include water and wastewater treatment plants, conveyance facilities, pumping plants, ecosystem restoration projects, and recreation facilities. Implementation of these types of actions and construction and operation of these types of facilities also could result in population and housing impacts.

The precise magnitude and extent of project-specific population and housing-related impacts would depend on the type of action or project being evaluated, its specific location, its total size, and a variety of project- and site-specific factors that are undefined at the time of preparation of this program-level EIR. Project-specific population and housing impacts would be addressed in project-specific environmental studies conducted by the lead agency at the time the projects are proposed for approval.

Impacts to population and housing from implementation of the Proposed Project and alternatives were evaluated in terms of how project components might influence the displacement of substantial numbers of people and existing housing, which could necessitate the construction of replacement housing elsewhere or cause substantial population growth in an area either directly or indirectly.

Construction and operations of specific water supply, levee maintenance, and other individual projects encouraged by the Proposed Project could result in population growth, displacement of population, or displacement of existing housing or construction of new housing. Construction of projects would result in a temporary increase of population associated with the temporary relocation of construction workers in the specific locale where the construction activity was occurring, which could lead to an increased, though temporary, demand for additional housing. Construction of projects could also lead to displacement of existing housing and people, depending on the size and location, of facilities. Due to the uncertainties associated with this program-level assessment, such as potential size and locations of potential future projects, potential population and housing impacts that could result from construction and operation of projects are discussed on a qualitative basis. Because project-level construction and operation details are not available for the project components analyzed, potential population and housing impacts were not evaluated for construction and operation in specific locations or regions.

This EIR proposes mitigation measures for population and housing impacts. The ability of these measures to reduce population and housing impacts to less-than-significant levels depends on project-specific environmental studies; enforceability of these measures depends on whether or not the project being proposed is a covered action. This is discussed in more detail in Section 16.4.3.6 and in Section 2B, Introduction to Resource Sections.

16.4.2 Thresholds of Significance

Based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines, an impact related to population and housing is considered significant if the Proposed Project would do any of the following:

- Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure);
- Displace substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere.

Indirect population growth, such as growth induced by the extension of infrastructure, is discussed in Section 24.1 of this EIR. The following discussion of environmental impacts is limited to those potential impacts that could result from actions or projects the Delta Plan alternatives could encourage. As individual activities are proposed by other agencies, these individual activities will need to be evaluated in site-specific environmental documents prepared by those lead agencies.

The impact analysis for the Proposed Project was structured to allow more-detailed analysis of impacts as they relate to the Delta Plan policy elements (Reliable Water Supply, Delta Ecosystem Restoration, Water Quality Improvement, Flood Risk Reduction, and Protection and Enhancement of Delta as an Evolving Place). To avoid unnecessary repetition in the analysis of impacts that could occur under the alternatives to the Proposed Project, each impact is discussed only once for each alternative.

16.4.3 Proposed Project

16.4.3.1 Reliable Water Supply

As described in Sections 2A, Proposed Project and Alternatives, and 2B, Introduction to Resource Sections, the Delta Plan does not direct the construction of specific projects, nor would projects be implemented under the direct authority of the Delta Stewardship Council. However, the Delta Plan seeks to improve water supply reliability by encouraging various actions that, if taken, could lead to completion, construction, and/or operation of projects that could provide a more-reliable water supply. Such projects and their features could include the following:

- Surface water facilities (water intakes, treatment and conveyance facilities, reservoirs, hydroelectric facilities)
- Groundwater projects (wells, wellhead treatment, conveyance facilities)
- Ocean desalination projects (water intakes, brine outfalls, treatment and conveyance facilities)
- Recycled wastewater and stormwater projects (treatment and conveyance facilities)
- Water transfers
- Water use efficiency and conservation program implementation

The number and location of all potential projects that would be implemented are not known at this time. However, the Proposed Project specifically names the DWR Surface Water Storage Investigations, which includes the North of Delta Offstream Storage Investigation (aka Sites Reservoir), Los Vaqueros Reservoir Project (Phase 2), and Upper San Joaquin River Basin Storage Investigation Plan (aka Temperance Flat). It also encourages the update of DWR Bulletin 118 that could lead to improvements in groundwater management and development of related facilities.

16.4.3.1.1 Impact 16-1a: Induce Substantial Population Growth in an Area, Either Directly or Indirectly

Construction-related activities at construction sites for the types of reliable water supply actions or projects and features the Delta Plan is encouraging generally would be the same, but the location of construction in relation to population centers, the number of construction workers employed, and the duration of project construction could vary. It is unclear at this time how implementation of the Proposed Project would result in specific construction activities, including the location, number, methods, and duration of construction activities. However, the Delta Plan encourages implementation of the North of Delta Offstream Storage Investigation (Sites Reservoir), Los Vaqueros Reservoir Project (Phase 2), and the Upper San Joaquin River Basin Storage Investigation Plan (Temperance Flat Reservoir). These are possible new or expanded surface water storage facilities. Water supply reliability projects specifically named by the Delta Plan, such as the three named above, have the potential to result in impacts to population and housing. The nature and magnitude of impacts will depend on the specific location and characteristics of the projects at the time they are implemented, and any specific mitigation measures adopted by the implementing agencies. As explained below, in most situations, according to previously completed environmental documents for similar projects reviewed as part of the preparation of this EIR, feasible mitigation exists to reduce significant impacts for these types of projects to a less-than-significant level.

Most counties in the Delta, Delta watershed, and areas outside the Delta that use Delta water have established manufacturing and construction industries and labor pools. Counties with few manufacturing and construction employees (typically rural counties with low populations) are either bordered by counties with established manufacturing and construction industries or are part of or within commuting distance of a Metropolitan Statistical Areas. For example, Colusa, Glenn, and Tehama counties (which are in the Delta watershed area) are rural counties whose construction and overall labor pool is a fraction of that of that the six-county Sacramento Area County of Governments (SACOG) region. However, since these counties are within commuting distance of the SACOG region, it is reasonable to assume that any construction projects in these counties would most likely use construction labor from the SACOG region. Even if some construction workers from outside the region were employed at a particular project site, construction workers typically do not change residences when assigned to a new construction site, and it is not anticipated that there would be any substantial permanent relocation of construction workers resulting from construction of water supply reliability projects. Construction workers typically do not change residences because, based on their craft/skill level, they may only be on a project site for the period for which their skill is required.

The Los Vaqueros Project has undergone project-specific environmental review via an EIS/EIR; the other two projects have not. The Los Vaqueros EIS/EIR, however, provides information about the impacts expected from construction of the two other projects, which are similar to the Los Vaqueros Project. In addition, the project-specific EIR for another analogous surface storage project (not named in the Delta Plan)—the Calaveras Dam Replacement Project—also provides information. The Los Vaqueros Reservoir Expansion Draft EIS/EIR (Reclamation et al. 2009) evaluated three alternatives to increase water storage, a new Delta intake structure, and conveyance facilities. Although, the Draft EIS/EIR evaluated the socioeconomic impacts associated with construction of the project alternatives, the lead agencies did not consider population growth resulting from construction to be an issue of concern to be evaluated in the EIS/EIR. Likewise, the San Francisco Public Utilities Commission (SFPUC) found in the EIR prepared for the project that construction-related effects of the Calaveras Dam Replacement project (SFPUC 2011) on population were not an issue of concern to be evaluated in the EIR.

Other documents reviewed for potential impacts to population (and housing) due to reliable water supply actions include the Davis-Woodland Water Supply Project EIR (City of Davis et al. 2007), Proposed Lower Yuba River Accord Draft EIR/EIS (DWR et al. 2007), City of Carlsbad Precise Development Plan and Desalination Plant Project EIR and FEIR (City of Carlsbad 2005, 2009), Huntington Beach Seawater Desalination Project Draft Recirculated EIR (City of Huntington Beach 2005), and the Western Municipal Water District (WMWD) Riverside-Corona Feeder Project Final Programmatic EIR (WMWD and Reclamation 2005) and Supplemental EIR/EIS (2011), among others described in Section 2A, Proposed Project and Alternatives.

Neither the City of Carlsbad Precise Development Plan and Desalination Plant Project EIR and FEIR (City of Carlsbad 2005, 2009) nor the Huntington Beach Seawater Desalination Project Draft Recirculated EIR (2005) included a separate population and housing section; so the projects' direct impacts to population and housing were not evaluated. WMWD also found that the project would not induce growth because land planning decisions are based on population projections that include the project.

Construction of new or altered water storage or other water reliability projects in the Delta and the Delta watershed, and areas outside the Delta that use Delta water could lead to a temporary increase in population in these locations as non-locals move into the specific areas to work on these projects. For this population growth impact to be considered significant, the population growth would have to exceed planned growth for the county/region. However, given the short-term nature of construction projects and the availability of sufficient labor markets within reasonable commute distance of possible projects, it is not expected that construction of water supply reliability projects would generate sufficient population growth to exceed expected county/regional population growth rates.

Operation of the types of reliable water supply projects identified in Section 16.4.3.1 could generate new jobs and therefore, encourage population growth. However, the facilities associated with these actions would not require extensive staff for operations and maintenance. In addition, most actions would not significantly alter operations and maintenance requirements of existing facilities relative to current conditions. In many instances, repairing, reconstructing, and improving existing water supply reliability facilities could result in a decrease in maintenance requirements. For the reasons described above for construction, any increases in operations and maintenance jobs could be filled by local employee pools, resulting in little to no change in population growth in the area.

The Los Vaqueros Reservoir Expansion EIS/EIR (Reclamation et al. 2009) evaluated operations of increased water storage, a new Delta intake structure, and conveyance facilities. The lead agency did not consider population growth from project operations to be an issue of concern to be evaluated in the EIS/EIR. The lead agency made the same decision for the Calaveras Dam Replacement Project. Population growth from project operations was not an issue of concern addressed in the EIR (SFPUC 2011).

Project-level impacts would be addressed in future site-specific environmental analysis conducted at the time such projects are proposed by lead agencies. As described above in the discussion of construction impacts, for this population growth impact to be considered significant, the population growth would have to exceed planned growth for the county/region. However, given the conditions described above, it is not expected that operations of the water supply reliability facilities would generate sufficient direct or indirect population growth to exceed the planned growth rate. This conclusion is based on the review of environmental analyses of similar projects and other, pertinent evidence cited in this EIR, and on the inability to identify a reasonably plausible scenario in which a potential significant impact would occur. It is therefore concluded that this impact would likely be **less than significant**. Future project-specific analyses may develop adequate information to arrive at a different conclusion; however, for purposes of this program-level analysis, there is no available information to indicate that another finding is warranted or supported by substantial evidence.

16.4.3.1.2 Impact 16-2a: Displace Substantial Numbers of Existing Housing or People, Necessitating the Construction of Replacement Housing Elsewhere

Most of the surface water facilities (water intakes, treatment facilities, reservoirs), groundwater storage facilities (wells, wellhead treatment), conveyance facilities (canals, pipelines, tunnels, siphons, and pumping plants), ocean desalination (water intakes and brine outfalls, treatment facilities), and recycled wastewater and stormwater treatment facilities that may be influenced or encouraged by the Proposed Project would not result in the displacement of substantial numbers of housing or people. However, some projects could result in permanent elimination of some housing because it may be difficult to avoid all structures within the construction footprint.

Inundation of lands with surface water reservoirs encouraged by the Proposed Project, such as those considered under DWR's Surface Water Storage Investigation, could lead to the permanent displacement of population and necessitate the construction of replacement housing elsewhere. Such construction could have environmental impacts. For this analysis, displacement of housing is considered significant if the resulting housing demand cannot be met with existing or planned housing in the specific project area. The permanent displacement of substantial numbers of existing housing units also could exacerbate any housing shortages related to the relocation of construction or operational workers, as discussed above.

The magnitude of this impact would depend on the lands that are inundated and the extent of inundation, but could potentially be significant. None of the projects specifically named in the Delta Plan (i.e., Sites Reservoir, Temperance Flat Reservoir, and Los Vaqueros Reservoir Expansion), however, are expected to result in significant displacement of either population and/or housing because they would be located in areas with low population (e.g., Sites Reservoir) or in inundation sites that are unpopulated (e.g., Temperance Flat Reservoir). Other types of water supply reliability projects such as groundwater projects and ocean desalination projects may be located near population centers and could result in the displacement of some people and housing. However, there is no substantial evidence that this impact would be significant. Project-level impacts would be addressed in future site-specific environmental analysis conducted at the time such projects are proposed by lead agencies. However, there is no substantial evidence that this impact would be significant. This conclusion is based on the review of environmental analyses of similar projects (see Section 16.4.3.1.1) and other, pertinent evidence cited in this EIR, and on the inability to identify a reasonably plausible scenario in which a potential significant impact would occur. It is therefore concluded that this impact would likely be **less than significant**. Future project-specific analyses may develop adequate information to arrive at a different conclusion; however, for purposes of this program-level analysis, there is no available information to indicate that another finding is warranted or supported by substantial evidence.

16.4.3.2 Delta Ecosystem Restoration

As described in Sections 2A, Proposed Project and Alternatives, and 2B, Introduction to Resource Sections, the Delta Plan does not direct the construction of specific projects, nor would projects be implemented under the direct authority of the Delta Stewardship Council. However, the Delta Plan seeks to improve the Delta ecosystem by encouraging various actions and projects, which, if taken could lead to completion, construction, and/or operation of projects that could improve the Delta ecosystem.

Features of such projects and actions that could be implemented as part of efforts to restore the Delta ecosystem include the following:

- Floodplain restoration
- Riparian restoration
- Tidal marsh restorations
- Stressor management
- Invasive species management (including removal of invasive vegetation)

The number and location of all potential projects that could be implemented is not known at this time. Five projects or project locations, however, are known to various degrees and are named in the Delta Plan. These are:

- Cache Slough Complex (includes Prospect Island Restoration Project)
- Cosumnes River-Mokelumne River Confluence: North Delta Flood Control and Ecosystem Restoration Project
- Lower San Joaquin River Bypass Proposal
- Suisun Marsh Habitat Management, Preservation, and Restoration Plan (includes Hill Slough Restoration Project)
- Yolo Bypass

Of these five, only the Suisun Marsh project has undergone project-specific environmental review (Reclamation et al. 2010).

16.4.3.2.1 Impact 16-1b: Induce Substantial Population Growth in an Area, Either Directly or Indirectly

Construction of ecosystem restoration projects could lead to a temporary increase in population as non-locals move into the specific areas to work on these projects. Generally, ecosystem restoration projects require fewer construction workers than reliable water supply projects, and therefore would have more limited population impacts than the projects discussed in Section 16.4.3.1.1.

The nature and magnitude of impacts will depend on the specific location and characteristics of the projects at the time they are implemented, and the specific mitigation measures adopted by the implementing agencies. In the case of the ecosystem restoration projects listed in 16.4.3.2, potential footprint impacts to population and housing resulting from construction of the project are expected to be less than significant primarily because the proposed locations for these projects are currently zoned for agriculture.

While the specific impacts of the projects encouraged by the Proposed Project are yet to be determined, projects recently evaluated under CEQA with characteristics similar to these projects provide perspective on the significance of these population and housing impacts and the likelihood that they can be mitigated. Documents reviewed for potential impacts include North Delta Flood Control and Ecosystem Restoration Project EIR (DWR 2010) and the Suisun Marsh Habitat Management, Preservation, and Restoration Plan Draft EIS/EIR (Reclamation et al. 2010).

In the North Delta Flood Control and Ecosystem Restoration Project EIR (DWR 2010), which analyzes proposed flood management and ecosystem restoration projects in the Delta, DWR concluded that there would be less-than-significant impacts to population and housing. In two of the alternatives evaluated for that project, the impacts to population and housing would be less than significant because most of the project area consists of agricultural land and the only part that has residents is home to a few people who live in trailers. The trailers would be relocated. The population and housing impacts in another alternative were also found to be less than significant due to the presence of between four and seven residences that would be relocated along with their residents. The EIR concluded that the project would not result in direct or indirect population impacts.

The Suisun Marsh Habitat Management, Preservation, and Restoration Plan Draft EIS/EIR (Reclamation et al. 2010), which addressed ecosystem restoration in the Suisun Marsh, did not specifically evaluate the direct impact of the project on population and housing but evaluated its economic and social impacts. However, the Draft EIS/EIR concluded that the slight increase in

employment would be absorbed by the workforce, and that any slight increase in population created by relocated workers and their dependents would be accommodated from available local housing. Thus, project would not result in direct or indirect population impacts.

Project-level impacts would be addressed in future site-specific environmental analysis conducted at the time such projects are proposed by lead agencies. For this population growth impact to be considered significant, the population growth would have to exceed planned growth for the county/region. However, given the conditions described above and that ecosystem restoration projects would likely be constructed in agricultural or other low population areas, it is not expected that construction of ecosystem restoration areas would generate sufficient population growth to exceed the planned growth rate.

There is no substantial evidence that this impact would be significant. This conclusion is based on the review of environmental analyses of similar projects and other, pertinent evidence cited in this EIR, and on the inability to identify a reasonably plausible scenario in which a potential significant impact would occur. It is therefore concluded that this impact would likely be less than significant. Future project-specific analyses may develop adequate information to arrive at a different conclusion; however, for purposes of this program-level analysis, there is no available information to indicate that another finding is warranted or supported by substantial evidence.

Operation of the ecosystem restoration projects is likely to result in minimal, and thus less-than-significant potential impacts to population since these projects are typically operated by the existing agency staff or require very few new personnel.

Project-level impacts would be addressed in future site-specific environmental analysis conducted at the time such projects are proposed by lead agencies. However, there is no substantial evidence that this impact would be significant. This conclusion is based on the review of environmental analyses of similar projects and other, pertinent evidence cited in this EIR, and on the inability to identify a reasonably plausible scenario in which a potential significant impact would occur. It is therefore concluded that this impact would likely be **less than significant**. Future project-specific analyses may develop adequate information to arrive at a different conclusion; however, for purposes of this program-level analysis, there is no available information to indicate that another finding is warranted or supported by substantial evidence.

16.4.3.2.2 Impact 16-2b: Displace Substantial Numbers of Existing Housing and/or People, Necessitating the Construction of Replacement Housing Elsewhere

Ecosystem restoration projects encouraged by the Proposed Project could result in elimination of some housing in the Delta because the restoration areas could include existing houses. However, Delta ecosystem restoration projects would be limited to areas with certain qualifying habitat types that have been identified as having the potential for the development of ecosystem restoration projects. Because areas identified as having the potential for ecosystem restoration activities are likely to be in unincorporated, agricultural areas with very few housing units and population, the potential impact to existing housing and population from ecosystem restoration construction activities would be minimal.

Project-level impacts would be addressed in future site-specific environmental analysis conducted at the time such projects are proposed by lead agencies. However, there is no substantial evidence that this impact would be significant. This conclusion is based on the review of environmental analyses of similar projects (see Section 16.4.3.2.1) and other, pertinent evidence cited in this EIR, and on the inability to identify a reasonably plausible scenario in which a potential significant impact would occur. It is therefore concluded that this impact would likely be **less than significant**. Future project-specific analyses may develop adequate information to arrive at a different conclusion; however, for purposes of this program-level analysis, there is no available information to indicate that another finding is warranted or supported by substantial evidence.

16.4.3.3 Water Quality Improvement

As described in Sections 2A, Proposed Project and Alternatives, and 2B, Introduction to Resource Sections, the Delta Plan does not direct the construction of specific projects, nor would projects be implemented under the direct authority of the Delta Stewardship Council. However, the Delta Plan seeks to improve water quality by encouraging various actions and projects, which if taken could lead to completion, construction, and/or operation of projects that could improve water quality.

Actions would include implementation of plans/programs that lead to reduced constituents from agricultural runoff and wastewater treatment plants.

The associated projects could include construction, operation, and maintenance of:

- Water treatment plants
- Conveyance facilities (pipelines and pumping plants)
- Wastewater treatment and recycle facilities
- Municipal stormwater treatment facilities
- Agricultural runoff treatment (eliminate, capture and treat/reuse)
- Wellhead treatment facilities
- Wells (withdrawal, recharge, and monitoring)

The number and location of all potential actions and projects that could be implemented is currently not known. Various projects, however, are known to some degree and are named in the Delta Plan. These are:

- Central Valley Drinking Water Policy
- Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS)
- Water Quality Control Plan Update for the San Francisco Bay/ Sacramento-San Joaquin Delta Estuary (water flow objectives update)
- SWRCB/Central Valley Regional Water Quality Control Board Strategic Workplan
- Complete the following regulatory processes, research, and monitoring:
  - Central Valley Pesticide Total Maximum Daily Load and Basin Plan Amendment for diazinon and chlorpyrifos
  - Central Valley Pesticide Total Maximum Daily Load and Basin Plan Amendment for pyrethroids
  - Total Maximum Daily Load and Basin Plan Amendments for selenium and methylmercury
- North Bay Aqueduct Alternative Intake Project

16.4.3.3.1 Impact 16-1c: Induce Substantial Population Growth in an Area, Either Directly or Indirectly

Water quality improvement projects encouraged by the Proposed Project would include new and expanded water and wastewater treatment plants and associated conveyance facilities (canals, pipelines, tunnels, siphons and pumping plants). Construction of these water quality improvement facilities could occur in rural areas and along waterways in the Delta and Delta watershed and in areas outside the Delta that use Delta water, as described in Section 2A, Proposed Project and Alternatives. Temporary population and housing impacts from construction of these facilities would be similar to those described in Section 16.4.3.1.1 for water supply reliability projects and actions. Water quality improvement projects specifically named by the Delta Plan, such as North Bay Aqueduct Alternative Intake Project, Central Valley Drinking Water Policy, and Water Quality Control Plan Update for the San Francisco

Bay/Sacramento-San Joaquin Delta Estuary, have the potential to result in impacts to population and housing. The nature and magnitude of impacts will depend on the specific location and characteristics of the projects at the time they are implemented, and the specific mitigation measures adopted by the implementing agencies.

While the specific impacts of the projects encouraged by the Proposed Project are yet to be determined, projects recently evaluated under CEQA with characteristics similar to these projects provide perspective on the significance of these population and housing impacts and the likelihood that they can be mitigated. Documents reviewed for potential impacts to population and housing include the Grassland Bypass Draft and Final EIS/EIR (Reclamation and San Luis & Delta-Mendota Water Authority 2008) and the Davis-Woodland Water Supply Project Draft EIR (City of Davis et al. 2007).

The Grassland Bypass Draft and Final EIS/EIR (Reclamation and San Luis & Delta-Mendota Water Authority 2008) analyzed the extension of the San Luis Drain Use Agreement in order to allow the Grassland Bypass time to acquire funds and develop feasible drainwater treatment technology, among other objectives. The lead agency did not evaluate the direct impact of the project on population and housing.

In the Davis-Woodland Water Supply Project Draft EIR (City of Davis et al. 2007), which includes a water intake in the Sacramento River, pumping plants, conveyance, and water treatment facilities, the City similarly did not specifically evaluate the direct impact of the project on population and housing.

Construction of water quality improvement projects could lead to a temporary increase in population as non-locals move into the specific areas to work on these projects. However, since most of these projects are likely to be located near population centers, it would be reasonable to assume that the required construction workers would come from these population centers. Alternatively, the construction workers could come from nearby large communities that are within commuting distance.

Operations of water quality facilities that could be constructed as a result of actions encouraged by the Delta Plan (such as water and wastewater treatment plants, conveyance facilities, and agricultural runoff treatment facilities) could result in permanent population growth in the specific locations of these projects. Because the number of employees required for operations of these facilities is smaller than the required number of construction workers, these impacts would be even smaller than the potential population increases associated with construction of these projects. There is no substantial evidence that this impact would be significant. This conclusion is based on the review of environmental analyses of similar projects and other, pertinent evidence cited in this EIR, and on the inability to identify a reasonably plausible scenario in which a potential significant impact would occur. It is therefore concluded that this impact would likely be **less than significant**. Future project-specific analyses may develop adequate information to arrive at a different conclusion; however, for purposes of this program-level analysis, there is no available information to indicate that another finding is warranted or supported by substantial evidence.

16.4.3.3.2 Impact 16-2c: Displace Substantial Numbers of Existing Housing and/or People, Necessitating the Construction of Replacement Housing Elsewhere

Construction of new and expanded treatment plants and pipelines could potentially displace substantial numbers of existing housing and people, similar to the impacts described in Section 16.4.3.1.2 for water supply reliability projects and actions. Although no substantial inundation of land would be expected with the construction of a water quality improvement project, the fact that these types of projects are typically located along waterways or near major urban centers could mean that people and housing could be displaced by the projects. It is unclear at this time how implementation of the Proposed Project would result in construction and operations of specific projects, including the location, number, capacity, design, size, operational criteria, and methods and duration of construction activities. Because of the uncertainties

underlying this program-level assessment, impacts displacing substantial number of existing housing and people in the Delta, Delta watershed, or areas outside the Delta that use Delta water cannot be accurately quantified. However, there is no substantial evidence that this impact would be significant. This conclusion is based on the review of environmental analyses of similar projects (see Section 16.4.3.3.1) and other, pertinent evidence cited in this EIR, and on the inability to identify a reasonably plausible scenario in which a potential significant impact would occur. It is therefore concluded that this impact would likely be **less than significant**. Future project-specific analyses may develop adequate information to arrive at a different conclusion; however, for purposes of this program-level analysis, there is no available information to indicate that another finding is warranted or supported by substantial evidence.

16.4.3.4 Flood Risk Reduction

As described in Sections 2A, Proposed Project and Alternatives, and 2B, Introduction to Resource Sections, the Delta Plan does not direct the construction of specific projects, nor would projects be implemented under the direct authority of the Delta Stewardship Council. However, the Delta Plan seeks to reduce the risk of floods in the Delta by encouraging various actions, which if taken could lead to completion, construction, and/or operation of projects that could reduce flood risks in the Delta. Such projects and their features could include the following:

- Setback levees
- Floodplain expansion
- Levee maintenance
- Levee modification
- Dredging
- Stockpiling of rock for flood emergencies
- Subsidence reversal
- Reservoir reoperation

The number and location of all potential projects that would be implemented is not known at this time. One possible project, however, is known to some degree and is named in the Delta Plan, specifically the Sacramento Deep Water Ship Channel and Stockton Deep Water Ship Channel Dredging (the United States Army Corps of Engineer's Delta Dredged Sediment Long-Term Management Strategy included in Appendix C, Attachment C-7 of this EIR). The Proposed Project names DWR's *A Framework for Department of Water Resources Investments in Delta Integrated Flood Management*, which could, upon completion, provide guidance on the prioritization flood protection investments.

16.4.3.4.1 Impact 16-1d: Induce Substantial Population Growth in an Area, Either Directly or Indirectly

Construction of flood risk reduction projects could lead to a temporary increase in population as non-locals move into the specific areas to work on these projects. Generally, construction-related population growth impacts for flood risk reduction projects would be less than construction-related population growth impacts of reliable water supply actions described in Section 16.4.3.1.1, because flood risk reduction projects require smaller workforces. The nature and magnitude of impacts will depend on the specific location and characteristics of the projects at the time they are implemented, and the specific mitigation measures adopted by the implementing agencies.

While the specific impacts of the projects encouraged by the Proposed Project are yet to be determined, projects recently evaluated under CEQA with characteristics similar to these projects provide perspective on the significance of these population and housing impacts and the likelihood that they can be mitigated. Documents reviewed for potential impacts to population and housing include: North Delta Flood Control and Ecosystem Restoration Project EIR (DWR, 2010), and the Draft Supplemental EIS/EIR for the Sacramento River Deep Water Ship Channel (USACE and Port of West Sacramento 2011).

In the North Delta Flood Control and Ecosystem Restoration Project Draft and Final EIR (DWR 2010), DWR concluded that there would be less–than-significant impacts to population and housing. In two of the alternatives, the impacts related to population and housing would be less than significant because most of the project area consists of agricultural land, and the only part that has residents is home to a few people who live in trailers. The trailers would be relocated. The population and housing impacts in another alternative were also found to be less than significant due to the presence of between four and seven residences that would be relocated along with their residents. The EIR concluded that the project would not result in direct population and housing impacts.

In the Draft Supplemental EIS/EIR for the Sacramento River Deep Water Ship Channel (USACE and Port of West Sacramento 2011), which illustrates some of the likely impacts from dredging, the lead agency did not specifically evaluate the direct impact of the project on population and housing.

Operation of flood risk reduction projects is likely to result in fewer, and thus less-than-significant impacts to population since these projects are likely to be operated by the existing agency staff or require very few new personnel. Generally, operation-related population growth impacts for flood risk reduction projects would be less than operation-related population growth impacts of reliable water supply actions described in Section 16.4.3.1.1, because the operation of flood risk reduction projects require smaller workforces. Personnel related to the operation of flood control structures and setback levees could result in permanent, population growth in the specific locations of these projects, though these increases in population would likely be much smaller than those associated with project construction. Depending on the size and location of the specific project, these demands may be met with existing local resources. If new housing units and/or other facilities are required to serve the new population, the construction and operation of such could have significant environmental impacts. However, in light of the small numbers of employees required to build and operate these facilities, there is no substantial evidence that this impact would be significant. This conclusion is based on the review of environmental analyses of similar projects and other, pertinent evidence cited in this EIR, and on the inability to identify a reasonably plausible scenario in which a potential significant impact would occur. It is therefore concluded that this impact would likely be **less than significant**. Future project-specific analyses may develop adequate information to arrive at a different conclusion; however, for purposes of this program-level analysis, there is no available information to indicate that another finding is warranted or supported by substantial evidence.

16.4.3.4.2 Impact 16-2d: Displace Substantial Numbers of Existing Housing and/or People, Necessitating the Construction of Replacement Housing Elsewhere

Population and housing displacement effects from construction of flood risk reduction facilities would be similar to those described in Section 16.4.3.1.2 for water supply reliability projects and actions.

The operation of new or altered levees would likely not displace substantial numbers of existing housing and/or people since most of these projects are likely to be constructed on existing levees or on agricultural lands or in areas with low populations. As such, there is no substantial evidence that this impact would be significant. This conclusion is based on the review of environmental analyses of similar projects (see Section 16.4.3.2.1) and other, pertinent evidence cited in this EIR, and on the inability to identify a reasonably plausible scenario in which a potential significant impact would occur. It is therefore concluded that this impact would likely be **less than significant**. Future project-specific analyses may develop adequate information to arrive at a different conclusion; however, for purposes of this program-level analysis, there is no available information to indicate that another finding is warranted or supported by substantial evidence.

16.4.3.5 Protection and Enhancement of Delta as an Evolving Place

As described in Sections 2A, Proposed Project and Alternatives, and 2B, Introduction to Resource Sections, the Delta Plan does not direct the construction of specific projects, nor would projects be implemented under the direct authority of the Delta Stewardship Council. However, the Delta Plan seeks to protect and enhance the Delta as an evolving place by encouraging various actions and projects, which if taken could lead to completion, construction, and/or operation of associated projects. Features of such actions and could include the following:

- Gateways, bike lanes, parks, trails, and marinas and facilities to support wildlife viewing, angling, and hunting opportunities
- Additional retail and restaurants in legacy towns to support tourism

The number and location of all potential projects that could be implemented is not currently known. However, three possible projects are known to some degree and are named in the Delta Plan, which are new State Parks at Barker Slough, Elkhorn Basin, and in the southern Delta.

16.4.3.5.1 Impact 16-1e: Induce Substantial Population Growth in an Area, Either Directly or Indirectly

Delta enhancement projects, including those specifically named by the Delta Plan such as the Barker Slough and Elkhorn Basin State Parks, have the potential to result in impacts to population and housing. The nature and magnitude of impacts will depend on the specific location and characteristics of the projects at the time they are implemented, and the specific mitigation measures adopted by the implementing agencies. Construction of these types of projects could lead to a temporary and minimal increase in population as non-locals move into the specific areas to work on these projects. Generally, construction-related population growth impacts for Delta enhancement projects would be substantially less than construction-related population growth impacts of reliable water supply-type actions described in Section 16.4.3.1.1.

It is unclear at this time how implementation of the Proposed Project would result in construction and operations of specific Delta enhancement projects, including the location, number, capacity, design, size, operational criteria, and methods and duration of construction and operation activities. Because of the uncertainties underlying this program-level assessment, impacts displacing substantial number of existing housing units and people in the Delta, Delta watershed, or areas outside the Delta that use Delta water cannot be accurately quantified.

Construction of Delta enhancement projects could result in some temporary relocation of construction workers into local project areas. While the specific impacts of these projects are yet to be determined, projects recently evaluated under CEQA with characteristics similar to those described provide perspective on the significance of these types of population and housing impacts and the likelihood that they can be mitigated. EIRs and EISs prepared for several similar projects illustrate many of the likely impacts. Documents reviewed for potential impacts include the Bidwell-Sacramento River State Park Habitat Restoration and Outdoor Recreation Facilities Development Project (The Nature Conservancy and DPR, 2008), which analyzes proposed enhancement projects in the Delta, and the San Luis Rey River Park Master Plan EIR (San Diego County Department of Parks and Recreation 2008).

In the EIR for the Bidwell-Sacramento River State Park Habitat Restoration and Outdoor Recreation Facilities Development Project (The Nature Conservancy and DPR, 2008), the lead agency concluded that the proposed project would not result in a significant increase in population because any increase in demand for labor resulting from the project, either directly or indirectly, would be met from the existing local population and, therefore no increase in population is expected. Thus, the project's impact on population growth would be less than significant. In the San Luis Rey River Park Master Plan EIR

(San Diego County Department of Parks and Recreation 2008), the lead agency found that the proposed project would have a less-than-significant impact on population growth because no permanent residences and no businesses are proposed as part of the Park project, no infrastructure extension is proposed, except from existing adjacent or nearby facilities such as pipelines or electrical lines onto the active use sites, and no road extensions are proposed.

Operation of the Delta enhancement projects, such as State Parks, is likely to result in minimal potential impacts to population since these projects are typically operated by the existing staff or require very few new personnel. Although the other Delta enhancement projects, such as additional new retail and restaurants in the legacy towns, are likely to provide additional employment opportunities, these employment opportunities are likely to be filled by existing residents. In the event that the local workforce cannot meet the needs of these new businesses, outside workers would relocate to the Delta region. However, for this population growth impact to be considered significant, the population growth would have to exceed planned growth for the community/county/region, which is unlikely. There is no substantial evidence that this impact would be significant. This conclusion is based on the review of environmental analyses of similar projects and other, pertinent evidence cited in this EIR, and on the inability to identify a reasonably plausible scenario in which a potential significant impact would occur. It is therefore concluded that this impact would likely be **less than significant**. Future project-specific analyses may develop adequate information to arrive at a different conclusion; however, for purposes of this program-level analysis, there is no available information to indicate that another finding is warranted or supported by substantial evidence.

16.4.3.5.2 Impact 16-2e: Displace Substantial Numbers of Existing Housing and/or People, Necessitating the Construction of Replacement Housing Elsewhere

Cultural, recreational, or natural resource enhancement projects are unlikely to be placed on land that is currently used for housing. Therefore, the operation of these projects is not likely to displace substantial numbers of housing and/or people. There is no substantial evidence that this impact would be significant. This conclusion is based on the review of environmental analyses of similar projects and other, pertinent evidence cited in this EIR, and on the inability to identify a reasonably plausible scenario in which a potential significant impact would occur. It is therefore concluded that this impact would likely be **less than significant**. Future project-specific analyses may develop adequate information to arrive at a different conclusion; however, for purposes of this program-level analysis, there is no available information to indicate that another finding is warranted or supported by substantial evidence.

16.4.3.6 Mitigation Measures

Although the impacts identified above are likely to be less than significant, the following mitigation measures are recommended (where applicable) to ensure that impacts are reduced to a less-than-significant level.

With regard to covered actions implemented under the Delta Plan, these mitigation measures will reduce the impacts of the Proposed Project. Project-level analysis by the agency proposing the covered action will determine whether the measures are sufficient to reduce those impacts to a less-than-significant level. Generally speaking, many of these measures are commonly employed to minimize the severity of an impact and in many cases would reduce impacts to a less-than-significant level, as discussed below in more detail.

With regard to actions taken by other agencies on the basis of Delta Plan recommendations (i.e., activities that are not covered actions), the implementation and enforcement of these measures would be within the responsibility and jurisdiction of public agencies other than the Delta Stewardship Council. Those agencies can and should adopt these measures as part of their approval of such actions, but the Delta Stewardship Council does not have the authority to require their adoption. Therefore, significant impacts of noncovered actions could remain significant and unavoidable.

How mitigation measures in this EIR relate to covered and noncovered actions is discussed in more detail in Section 2B, Introduction to Resource Sections.

The following mitigation measures would reduce the effects of Impacts 16-1a through e (Construction and Operations of Projects Could Result in Inducing Substantial Population and Housing Growth in an Area, Either Directly or Indirectly) and 16-2a through e (Displacement of Substantial Numbers of Existing Housing and/or People, Necessitating the Construction of Replacement Housing Elsewhere):

- Require compliance with applicable local policies and regulations regarding the provision of affordable housing.
- Construct replacement housing if existing housing will be displaced.

In most cases, implementation of mitigation measures is likely to reduce impacts associated with projects to a **less-than-significant** level. Future project-specific analyses may develop adequate information to arrive at a different conclusion; however, for purposes of this program-level analysis, there is no available information to indicate that another finding is warranted or supported by substantial evidence.

16.4.4 No Project Alternative

As described in Section 2A, Proposed Project and Alternatives, the No Project Alternative is based on the continuation of existing plans and policies, the continued operation of existing facilities into the future, and permitted and funded projects. Seven ongoing projects have been identified as part of the No Project Alternative. The list of projects included in the No Project Alternative is presented in Table 2-2.

Potential construction- and operation-related population and housing impacts under the No Action Alternative would be expected to be less than the Proposed Project for the surface water projects since there would be less construction. Similarly, the tidal marsh restoration projects would also be expected to have fewer construction- and operation-related impacts on population and housing since there would be fewer of these types of project than under the Proposed Project.

For example, construction of the Freeport Regional Water Project was completed but operations will not start until warranted by dry-year hydrologic conditions. Therefore, in this particular case, the project has no ongoing construction-related or operations-related effects on population and housing.

With the No Project Alternative, the Delta Plan would not be in place to encourage various other projects to move forward. To the extent that the absence of the Delta Plan prevents those projects from moving forward, there could be **fewer** potential construction-related population and housing impacts in the near term and **fewer** construction- and operations-related population and housing impacts over the long-term. However, these occurrences may be **significant** depending on site-specific conditions.

16.4.5 Alternative 1A

Under Alternative 1A, the construction and operation of surface water projects (water intakes, treatment and conveyance facilities, and reservoirs) would be the same as under the Proposed Project. As described in Section 2A, Proposed Project and Alternatives, there would be fewer groundwater projects (wells, wellhead treatment, conveyance facilities), ocean desalination projects, recycled wastewater and stormwater projects (treatment and conveyance facilities), and water transfers compared with the Proposed Project. Water use efficiency and conservation programs also would be reduced relative to the Proposed Project.

Projects to restore the Delta ecosystem would be reduced relative to the Proposed Project, and the implementation of flow objectives that could lead to a more natural flow regime in the Delta would not be accelerated. Ecosystem stressor management activities and invasive species management (including removal of invasive vegetation) would be the same as described for the Proposed Project.

Projects and actions to improve water quality would be the same as under the Proposed Project. Flood risk reduction projects also would be the same as under the Proposed Project, except that there would be less emphasis on levee maintenance and modification for levees that protect agricultural land and more emphasis on levees that protect water supply corridors, which could result in an overall reduction in these activities. Projects to protect and enhance the Delta as an evolving place would be the same as for the Proposed Project.

16.4.5.1.1 Impact 16-1: Induce Substantial Population Growth in an Area, Either Directly or Indirectly

Similar types of impacts to population would occur under Alternative 1A as described for the Proposed Project, but the impacts would likely be less because fewer projects would be implemented. The precise difference in the number of or size of actions/activities is not known at this time. To the extent that construction would have temporary impacts on population, these impacts would be greater under the Proposed Project because it generally involves more construction than Alternative 1A. Given the reduced number and magnitude of actions under the Alternative 1A (e.g., large-scale ecosystem restoration and water supply reliability projects) permanent impacts on population under the Proposed Project would be greater than those under Alternative 1A. Therefore, impacts on population growth under Alternative 1A would likely be **less than significant** for the same reasons as discussed above for the Proposed Project.

As compared to existing conditions, the impacts on population growth under Alternative 1A would likely be **less than significant** as described above for the Proposed Project.

16.4.5.1.2 Impact 16-2: Displace Substantial Numbers of Existing Housing and/or People, Necessitating the Construction of Replacement Housing Elsewhere

Similar types of impacts to housing and people would occur under Alternative 1A as described for the Proposed Project, but the impacts would likely be less because fewer projects would be implemented. The precise difference in the number of or size of actions/activities is not known at this time. To the extent that construction would have temporary impacts on population and housing, these impacts would be greater under the Proposed Project because it generally involves more construction than Alternative 1A. Given the reduced number and magnitude of actions under the Alternative 1A (e.g., large-scale ecosystem restoration and water supply reliability projects), permanent impacts on population and housing under the Proposed Project would be greater than those under Alternative 1A. Therefore, impacts on population and housing under Alternative 1A would likely be **less than significant** for the same reasons as discussed above for the Proposed Project.

As compared to existing conditions, the impacts on housing and people under Alternative 1A would likely be **less than significant**, as described above for the Proposed Project.

16.4.5.2 Mitigation Measures

Mitigation measures for Alternative 1A would be the same as those described in Section 16.4.3.6 for the Proposed Project. In most cases, implementation of mitigation measures is likely to reduce population and housing impacts associated with projects to a **less-than-significant** level. Future project-specific analyses may develop adequate information to arrive at a different conclusion; however, for purposes of this program-level analysis, there is no available information to indicate that another finding is warranted or supported by substantial evidence.

16.4.6 Alternative 1B

Under Alternative 1B, the construction and operation of surface water projects (water intakes, treatment and conveyance facilities, and reservoirs) would be the same as under the Proposed Project. As described in Section 2A, Proposed Project and Alternatives, there would be fewer groundwater projects (wells, wellhead treatment, conveyance facilities), recycled wastewater and stormwater projects (treatment and conveyance facilities), and water transfers compared with the Proposed Project. Water use efficiency and conservation programs also would be reduced relative to the Proposed Project. There would be no ocean desalination projects.

Projects to restore the Delta ecosystem would be reduced in extent relative to the Proposed Project and would not emphasize restoration of floodplains in the lower San Joaquin River. Implementation of flow objectives would not be accelerated or include public trust considerations. Ecosystem stressor management activities and invasive species management (including removal of invasive vegetation) would be increased relative to the Proposed Project, but a variance to the USACE Levee Vegetation Policy would not be pursued. In addition, Alternative 1B would not require conformance with the habitat types and elevation maps presented in the Conservation Strategy for Restoration of the Sacramento-San Joaquin Delta Ecological Management Zone and the Sacramento and San Joaquin Valley Regions (DFG 2011). Water quality improvement projects, including water treatment plants, conveyance facilities, and wells and wellhead treatment facilities, would be less-emphasized relative to the Proposed Project, and greater emphasis would be placed on the construction and operation of wastewater treatment and recycle facilities and municipal stormwater treatment facilities.

Flood risk reduction would place greater emphasis on levee modification/maintenance and dredging than under the Proposed Project, but there would be no setback levees or subsidence reversal projects. Floodplain expansion projects would be fewer or less extensive, and use of reservoir reoperation would be reduced. Actions to protect and enhance the Delta as an evolving place would be consistent with the Economic Sustainability Plan, but the locations for new parks, as encouraged by the Proposed Project, would not be emphasized.

16.4.6.1.1 Impact 16-1: Induce Substantial Population Growth in an Area, Either Directly or Indirectly

Similar types of impacts to population would occur under Alternative 1B as described for the Proposed Project, but the impacts would likely be less because fewer projects would be implemented. The precise difference in the number of or size of actions/activities is not known at this time. To the extent that construction would have temporary impacts on population, these impacts would be greater under the Proposed Project because it generally involves more construction than Alternative 1B. Given the reduced number and magnitude of actions under the Alternative 1B (e.g., less emphasis on groundwater projects, less emphasis on water quality improvement projects and fewer Delta ecosystem restoration projects) permanent impacts on population under the Proposed Project would be greater than those under Alternative 1B. Therefore, impacts on population growth under Alternative 1B would likely be **less than significant**.

As compared to existing conditions, the impacts on population growth under Alternative 1B would likely be **less than significant**, as described above for the Proposed Project.

16.4.6.1.2 Impact 16-2: Displace Substantial Numbers of Existing Housing and/or People, Necessitating the Construction of Replacement Housing Elsewhere

Similar types of impacts to housing and people would occur under Alternative 1B as described for the Proposed Project, but the impacts would likely be less because fewer projects would be implemented. The precise difference in the number of or size of actions/activities is not known at this time. To the extent that construction would have temporary impacts on population and housing, these impacts would be greater under the Proposed Project because it generally involves more construction than Alternative 1B. Given the reduced number and magnitude of actions under the Alternative 1B (e.g., less emphasis on groundwater projects, less emphasis on water quality improvement projects and fewer Delta ecosystem restoration projects) permanent impacts on population and housing under the Proposed Project would be greater than those under Alternative 1B. Therefore, impacts on housing and people under Alternative 1B would likely be **less than significant**.

As compared to existing conditions, the impacts on housing and people under Alternative 1B would likely be **less than significant**, as described above for the Proposed Project.

16.4.6.2 Mitigation Measures

Mitigation measures for Alternative 1B would be the same as those described in Section 16.4.3.6 for the Proposed Project. In most cases, implementation of mitigation measures is likely to reduce impacts associated with projects to a **less-than-significant** level. Future project-specific analyses may develop adequate information to arrive at a different conclusion; however, for purposes of this program-level analysis, there is no available information to indicate that another finding is warranted or supported by substantial evidence.

16.4.7 Alternative 2

As described in Section 2A, Proposed Project and Alternatives, Alternative 2 would place greater emphasis on groundwater, ocean desalination, water transfers, water use efficiency and conservation, and recycled water projects and less emphasis on surface water projects. The surface storage reservoirs considered under the DWR Surface Water Storage Investigation would not be encouraged; instead, surface storage in the Tulare Basin would be emphasized. Ecosystem restoration projects similar to but less extensive than those encouraged by the Proposed Project would be emphasized without the requirement to conform to the Ecosystem Restoration Program habitat types and elevation map. Alternative 2 would emphasize the development of flow objectives that take into consideration updated flow criteria that support a more natural flow regime, water rights, and greater protection of public trust resources.

Actions to improve water quality would be similar to or greater than those under the Proposed Project, especially the treatment of wastewater and agricultural runoff. Actions to reduce flood risk under Alternative 2 would emphasize floodplain expansion and reservoir reoperation rather than levee construction and modification. The stockpiling of rock and encouragement of subsidence reversal projects would be the same as under the Proposed Project, as would actions to protect and enhance the Delta as an evolving place.

16.4.7.1.1 Impact 16-1: Induce Substantial Population Growth in an Area, Either Directly or Indirectly

Similar impacts to population would occur under Alternative 2 as described for the Proposed Project, but the impacts would be less because fewer large water supply projects would be implemented. No major surface water storage facilities would be implemented under Alternative 2. The precise difference in the number of or size of actions/activities is not known at this time. Given the reduced number and magnitude of actions under the Alternative 2 (e.g., less emphasis on surface water projects and less-extensive ecosystem restoration projects) permanent impacts on population under the Proposed Project would be greater than those under Alternative 2. Therefore, impacts on population growth under Alternative 2 would likely be **less than significant** for the same reasons as discussed above for the Proposed Project.

As compared to existing conditions, the impacts on population growth under Alternative 2 would likely be **less than significant** as described above for the Proposed Project.

16.4.7.1.2 Impact 16-2: Displace Substantial Numbers of Existing Housing and/or People, Necessitating the Construction of Replacement Housing Elsewhere

Similar impacts to housing and people would occur under Alternative 2 as described for the Proposed Project, but the impacts would be less because fewer large water supply projects would be implemented. No major surface water storage facilities would be implemented under Alternative 2. The precise difference in the number of or size of actions/activities is not known at this time. To the extent that construction would have temporary impacts on population and housing, these impacts would be greater under the Proposed Project because it generally involves more construction than Alternative 2. Given the reduced number and magnitude of actions under the Alternative 2 (e.g., less emphasis on surface water projects and less extensive ecosystem restoration projects) permanent impacts on population and housing under the Proposed Project would be greater than those under Alternative 2. Therefore, impacts on housing and people under Alternative 2 would likely be **less than significant** for the same reasons as discussed above for the Proposed Project.

As compared to existing conditions, the impacts on housing and people under Alternative 2 would likely be **less than significant** as described above for the Proposed Project.

16.4.7.2 Mitigation Measures

Mitigation measures for Alternative 2 would be the same as those described in Section 16.4.3.6 for the Proposed Project. In most cases, implementation of mitigation measures is likely to reduce impacts associated with projects to a **less-than-significant** level. Future project-specific analyses may develop adequate information to arrive at a different conclusion; however, for purposes of this program-level analysis, there is no available information to indicate that another finding is warranted or supported by substantial evidence.

16.4.8 Alternative 3

As described in Section 2A, Proposed Project and Alternatives, the water supply reliability projects and actions under Alternative 3 would be similar to those of the Proposed Project, although there would be less emphasis on surface water projects. Ecosystem restoration projects (floodplain restoration, riparian restoration, tidal marsh restoration, and floodplain expansion) would be reduced relative to the Proposed Project, and restoration on publicly owned lands, especially in Suisun Marsh and the Yolo Bypass, would be emphasized. There would be more stressor management actions (e.g., programs for water quality, water flows) and more management for nonnative invasive species. Water quality improvements would

be the same as for the Proposed Project. Actions under Alternative 3 to reduce flood risk would not include setback levees or subsidence reversal but would result in greater levee modification/maintenance and dredging relative to the Proposed Project. Reservoir reoperation and rock stockpiling would be the same as for the Proposed Project, as would activities to protect and enhance the Delta as an evolving place.

16.4.8.1.1 Impact 16-1: Induce Substantial Population Growth in an Area, Either Directly or Indirectly

Similar impacts to population would occur under Alternative 3 as described for the Proposed Project, but the impacts would be less because fewer large water supply projects would be implemented. No major storage facilities would be implemented under Alternative 3. The precise difference in the number of or size of actions/activities is not known at this time. To the extent that construction would have temporary impacts on population, these impacts would be greater under the Proposed Project because it generally involves more construction than Alternative 3. Given the reduced number and magnitude of actions under the Alternative 3 (e.g., less emphasis on surface water projects, less emphasis on ecosystem restoration projects, fewer setback levees) permanent impacts on population under the Proposed Project would be greater than those under Alternative 3. Therefore, impacts on population growth under Alternative 3 would likely be **less than significant** for the same reasons as discussed above for the Proposed Project.

As compared to existing conditions, the impacts on population growth under Alternative 3 would likely be **less than significant** as described above for the Proposed Project.

16.4.8.1.2 Impact 16-2: Displace Substantial Numbers of Existing Housing and/or People, Necessitating the Construction of Replacement Housing Elsewhere

Similar impacts to housing and people would occur under Alternative 3 as described for the Proposed Project, but the impacts would be less because fewer large water supply projects would be implemented. No major surface water storage facilities would be implemented under Alternative 3. The precise difference in the number of or size of actions/activities is not known at this time. To the extent that construction would have temporary impacts on population and housing, these impacts would be greater under the Proposed Project because it generally involves more construction than Alternative 3. Given the reduced number and magnitude of actions under the Alternative 3 (e.g., less emphasis on surface water projects, less emphasis on ecosystem restoration projects, fewer setback levees) permanent impacts on population and housing under the Proposed Project would be greater than those under Alternative 3. Therefore, impacts on housing and people under Alternative 3 would likely be **less than significant** for the same reasons as discussed above for the Proposed Project.

As compared to existing conditions, the impacts on housing and people under Alternative 3 would likely be **less than significant** as described above for the Proposed Project.

16.4.8.2 Mitigation Measures

Mitigation measures for Alternative 3 would be the same as those described in Section 16.4.3.6 for the Proposed Project. In most cases, implementation of mitigation measures is likely to reduce impacts associated with projects to a **less-than-significant** level. Future project-specific analyses may develop adequate information to arrive at a different conclusion; however, for purposes of this program-level analysis, there is no available information to indicate that another finding is warranted or supported by substantial evidence.

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