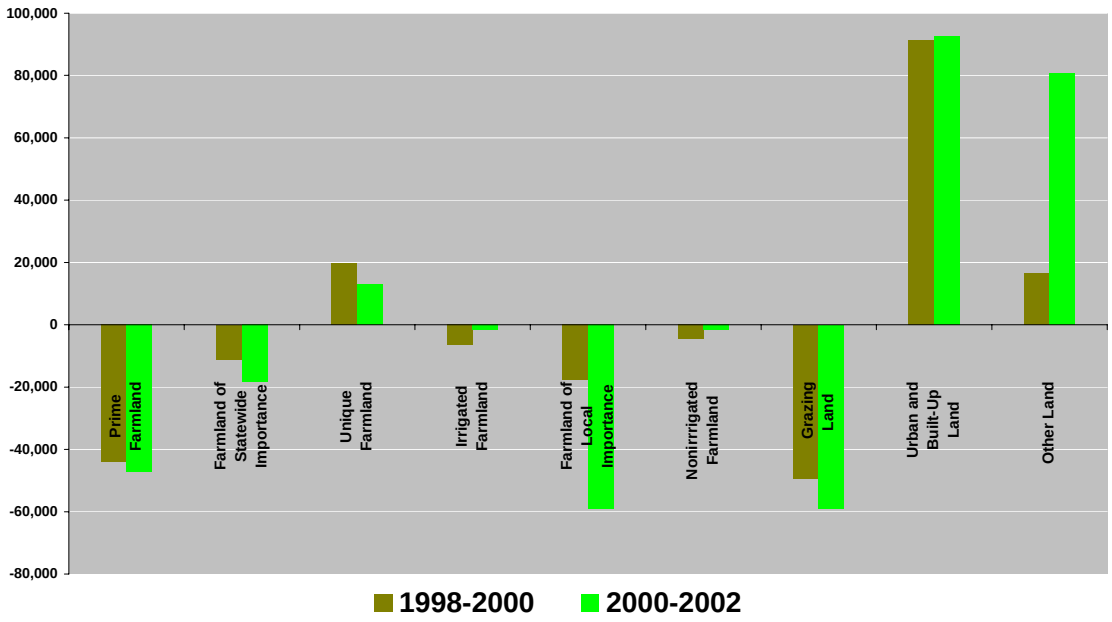
4 Land Use Conversion, 2000-2002

The San Joaquin Valley's urbanization rate increased 76% compared to the prior update. Improved documentation of rural land uses indicates fewer acres qualify for agricultural categories.

For the first two years of the decade, California land was converted to urban uses at a pace just 1.6% above that of the 1998-2000 period. Development on Prime Farmland accelerated by 13%, however, as the San Joaquin Valley absorbed one-quarter of the 92,750 new urban acres.

Irrigated farmland also lost ground due to land idling, low-density residential, and ecological restoration uses. The trend toward vineyard development, which had offset farmland loss in recent updates, slowed in the 2000-02 period, resulting in a net loss in irrigated land 28% larger than in 1998-2000. The change in each category for both updates is seen in Figure 8, below.

FIGURE 8
STATEWIDE
ACREAGE
CHANGE



Information in this chapter is based on statewide Table 3 (page 17), tables in Appendix C, and county field analyst reports. Individual county conversion information is located in Appendix A. Field analyst reports are available on the FMMP web site.

Urbanization

Inland counties from Placer, south through the San Joaquin Valley and into southern California, were the focus of urban development between 2000 and 2002. Inland areas represented seven of the top ten urbanizing counties, with coastal San Diego, Orange, and Sonoma occupying the remaining spots (Table 2).

TABLE 2
TOP OVERALL
URBAN RANKS

Urbanization from All Categories

Top 10 Counties - net acres

1998-2000		2000-2002	
Riverside	14,080	San Bernardino	12,133
San Diego	12,437	San Diego	8,807
Sacramento	6,430	Riverside	8,050
Contra Costa	4,798	Kern	6,265
Santa Clara	4,701	San Joaquin	6,211
Sonoma	4,626	Placer	5,408
Placer	3,840	Orange	4,609
Fresno	3,693	Tulare	2,832
Orange	3,397	Sacramento	2,741
Los Angeles	2,979	Sonoma	2,711

Echoing population and housing trends of recent years, the 'inland empire' counties of Riverside and San Bernardino accounted for 22% of the increase in urban land statewide. While the ranking and acreage of each county differs from one reporting period to the next, these two counties, along with San Diego County, have had the largest increases in urban acreage since FMMP's inception in the early 1980s.

Housing was the largest component of new urban acreage in the top four southern California counties. Individual housing developments, as documented in FMMP field analyst reports, ranged from 20 to 600 acres. Golf courses and golf course communities represented approximately 25% of new urban land in Riverside County (mostly in the Coachella Valley), and 14% in San Diego County. Distribution centers and other industrial uses occupied a substantial component (18%) of new urban in San Bernardino County, particularly near the Ontario and Chino airports. Individual structures of this land use type may occupy 20 acres or more.

In the San Joaquin Valley (Valley), the amount of land urbanized between 2000-02 increased by 76% relative to the 1998-2000 period. Nearly 25% of all urbanization occurred in the Valley, as Kern, San Joaquin, and Tulare counties occupied positions in the top ten urbanizing list. While the scale of individual developments was generally smaller in the Valley than in southern California, communities such as Tracy in San Joaquin County were notable for construction on approximately 1,000 acres of agricultural land during the two-year cycle. As with most areas of the state, housing development in the Valley was accompanied by commercial uses and community infrastructure such as schools, churches, water treatment and transportation facilities.

DOCUMENTATION

Detailed reports describing change in each county are available on the FMMP web site: conservation.ca.gov/dlrp/fmmp

Sacramento and Placer counties comprise the core of the Sacramento metropolitan area, and continue on the top-urbanizing list as they have since the early 1990s.

TABLE 3
CALIFORNIA FARMLAND CONVERSION SUMMARY (1)
2000-2002

DEPARTMENT OF CONSERVATION
Division of Land Resource Protection

Farmland Mapping and Monitoring Program

PART I
Land Use Totals and Net Changes

LAND USE CATEGORY	TOTAL ACREAGE INVENTORIED		2000-2002 ACREAGE CHANGES			
	2000	2002	ACRES LOST (-)	ACRES GAINED (+)	TOTAL ACREAGE CHANGED	NET ACREAGE CHANGED
Prime Farmland	5,228,884	5,181,712	114,619	67,448	182,067	-47,172
Farmland of Statewide Importance	2,736,814	2,718,533	59,121	40,840	99,961	-18,281
Unique Farmland	1,253,663	1,266,779	57,080	70,196	127,276	13,116
Irrigated Farmland	544,593	542,967	7,092	5,467	12,559	-1,626
Nonirrigated Farmland	11,244	9,564	1,744	64	1,808	-1,680
Farmland of Local Importance	3,050,694	2,991,655	157,441	98,402	255,843	-59,039
IMPORTANT FARMLAND SUBTOTAL	12,825,892	12,711,210	397,097	282,417	679,514	-114,682
Grazing Land	15,466,541	15,407,663	172,857	113,980	286,837	-58,878
AGRICULTURAL LAND SUBTOTAL	28,292,433	28,118,873	569,954	396,397	966,351	-173,560
Urban and Built-up Land	3,185,252	3,278,002	90,089	182,838	272,927	92,750
Other Land	13,668,231	13,749,040	168,401	249,209	417,610	80,809
Water Area	704,432	704,433	1	2	3	1
TOTAL AREA INVENTORIED	45,850,348	45,850,348	828,445	828,446	1,656,891	0

PART II
Land Committed to Nonagricultural Use

LAND USE CATEGORY	TOTAL ACREAGE 2002
Prime Farmland	24,762
Farmland of Statewide Importance	4,856
Unique Farmland	6,683
Irrigated Farmland	4
Nonirrigated Farmland	0
Farmland of Local Importance	32,698
IMPORTANT FARMLAND SUBTOTAL	69,003
Grazing Land	64,955
AGRICULTURAL LAND SUBTOTAL	133,958
Urban and Built-up Land	0
Other Land	48,043
Water Area	0
TOTAL ACREAGE REPORTED	182,001

PART III Land Use Conversion from 2000 to 2002 (2)

LAND USE CATEGORY		Prime Farmland	Farmland of Statewide Importance	Unique Farmland	Farmland of Local Importance	Interim Categories	Subtotal Important Farmland	Grazing Land	Total Agricultural Land	Urban and Built-up Land	Other Land	Total Converted To Another Use
Prime Farmland	to:	--	1,540	3,248	37,393	--	42,181	16,402	58,583	25,760	30,276	114,619
Farmland of Statewide Importance	to:	1,159	--	1,317	21,994	--	24,470	5,993	30,463	7,655	21,003	59,121
Unique Farmland	to:	2,031	1,133	--	8,270	--	11,434	18,466	29,900	3,628	23,552	57,080
Irrigated Farmland	to:	--	--	--	--	18	18	2,764	2,782	463	3,847	7,092
Nonirrigated Farmland	to:	--	--	--	--	381	381	869	1,250	1	493	1,744
Farmland of Local Importance	to:	29,036	19,942	21,579	--	--	70,557	24,081	94,638	21,542	41,261	157,441
IMPORTANT FARMLAND SUBTOTAL		32,226	22,615	26,144	67,657	399	149,041	68,575	217,616	59,049	120,432	397,097
Grazing Land	to:	11,885	7,508	26,740	10,996	2,898	60,027	--	60,027	34,924	77,906	172,857
AGRICULTURAL LAND SUBTOTAL		44,111	30,123	52,884	78,653	3,297	209,068	68,575	277,643	93,973	198,338	569,954
Urban and Built-up Land	to:	6,366	2,118	1,967	8,742	231	19,424	19,794	39,218	--	50,871	90,089
Other Land	to:	16,971	8,599	15,345	11,007	2,003	53,925	25,611	79,536	88,865	--	168,401
TOTAL ACREAGE CONVERTED	to:	67,448	40,840	70,196	98,402	5,531	282,417	113,980	396,397	182,838	249,209	828,444

(1) This table includes acreage data for the entire FMMP survey area, including 3.6 million acres in Butte and Kern counties mapped using Interim categories. Note that prior conversion reports did not include Interim data in the statewide table. Part III has been modified by adding an Interim categories column and removing Water, which did not change during the 2002 update.

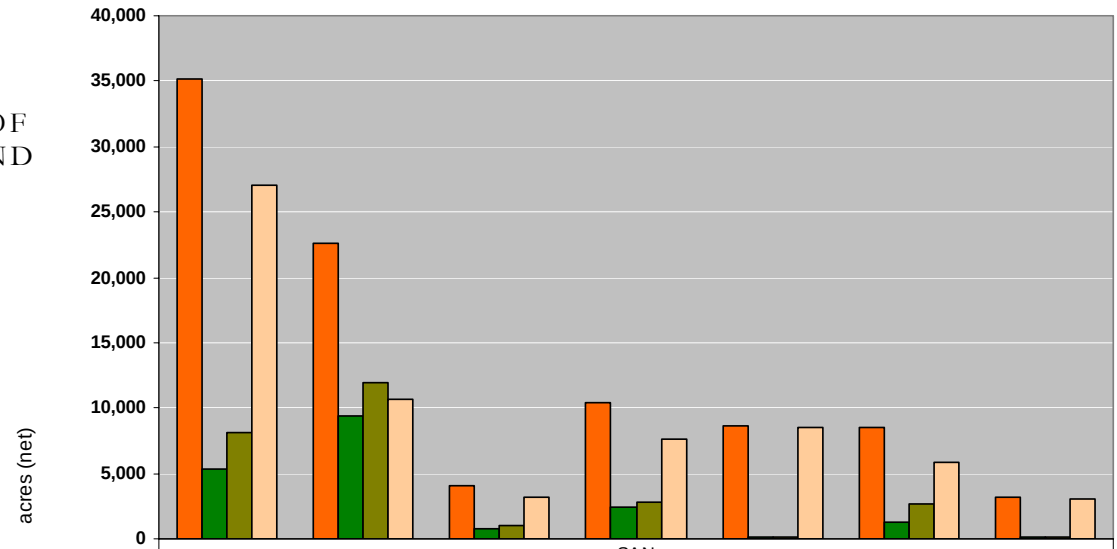
(2) Digital aerial photography and satellite data were used to improve land use mapping accuracy in 30 counties during the 2002 update. The adjustment of linework in these counties resulted in gross conversion figures (Part III) that are larger or more unusual than would be expected. Net figures (Part I) balance out the adjustments and are a more accurate reflection of overall change.

Expansions at the Sacramento International Airport, Folsom Lake Community College, and other infrastructure developments were notable exceptions to the acreage devoted to housing and commercial uses. The Roseville area added approximately 1,300 acres of new homes and commercial uses on former grazing land.

The relative location and type of land converted to urban uses is shown in Figure 9. Note that specific counties may dominate the regional change statistics: El Dorado and Placer counties make up the bulk of the Sierra Foothill urbanization, while Sacramento and Yolo counties dominate the Sacramento Valley figures. These four counties, as well as Sutter and Yuba, comprise the Sacramento Area Council of Governments (SACOG) region. SACOG counties represented nearly 14% of urbanization occurring statewide between 2000-02.

Conversion of Prime Farmland was nearly 1.8 times higher in the San Joaquin Valley than Southern California during the period. The sources of new urban land by county are enumerated in Appendix C-Table 1.

FIGURE 9
SOURCES OF
URBAN LAND
2000-2002



	SOUTHERN CALIFORNIA	SAN JOAQUIN VALLEY	CENTRAL COAST	SAN FRANCISCO BAY	SIERRA FOOTHILL	SACRAMENTO VALLEY	NORTH STATE
Total New Urban	35,182	22,655	4,099	10,443	8,662	8,528	3,181
From Prime	5,383	9,412	764	2,399	103	1,267	66
From All Irrigated Categories	8,181	11,939	959	2,775	120	2,666	185
From Nonirrigated Categories	27,001	10,716	3,140	7,668	8,542	5,862	2,996

The leading counties for urbanization of irrigated farmland are listed in Table 4. Five of the ten are located in the San Joaquin Valley. In many of the counties in Table 4, well over half the urbanization occurred on irrigated land as existing communities expanded.

San Joaquin County's irrigated farmland to urban conversion, at 4,518 acres, is the closest any county has yet come to the record 5,119 acre conversion in Riverside County that occurred during the 1988-90 update.

TABLE 4
TOP IRRIGATED TO URBAN RANKS

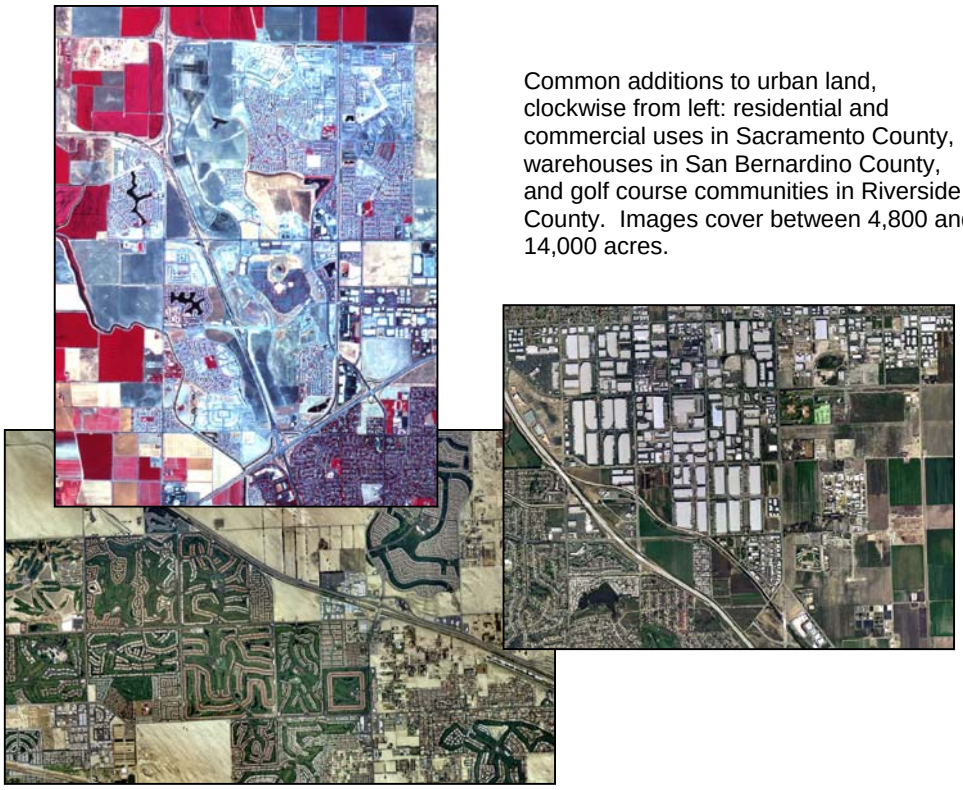
Irrigated Farmland to Urban

Top 10 Counties - net acres

1998-2000		2000-2002	
Riverside	2,502	San Joaquin	4,518
Fresno	2,151	Riverside	2,488
San Joaquin	2,037	San Bernardino	2,195
Santa Clara	1,904	Tulare	1,861
Sacramento	1,863	Stanislaus	1,778
San Diego	1,437	Orange	1,547
Contra Costa	1,329	Kern	1,212
Orange	972	Fresno	1,147
San Bernardino	940	Yolo	960
Merced	874	Santa Clara	858

Statewide, 21% of new urban land between 2000 and 2002 had been Prime Farmland, and an additional 8% came from other irrigated categories. Urbanization on Prime Farmland increased by 13% compared with the 1998-2000 update cycle. The continued shift of urban pressure in to the central valley affected this change, even as overall urbanization remained nearly identical to the prior cycle.

FIGURE 10
URBAN AIR PHOTO EXAMPLES



Common additions to urban land, clockwise from left: residential and commercial uses in Sacramento County, warehouses in San Bernardino County, and golf course communities in Riverside County. Images cover between 4,800 and 14,000 acres.

Other Changes Affecting Agriculture

Urbanization is one of many factors affecting California's farmland resources. Changes in technology, agricultural markets and economics, water availability, and disease-causing organisms or pests are also major influences. These influences result in changes categorized here as bringing land into irrigated use or as removing land from irrigated use. These statistics are enumerated by county in Appendix C-Table 2.

With certain exceptions, such as rural residential development, changes of this type have less permanency than does urban conversion. Land may move in either direction over time, although FMMP does employ mapping techniques to minimize the effect of annual fluctuations or crop rotation cycles.

Land is moved from irrigated categories when it has not shown evidence of irrigated use for three update cycles (approximately six years). This helps account for short-term fluctuations that are not truly changes in the amount of irrigated farmland. FMMP analysts attempt to confirm changes of this type via site visits when possible. In instances where supplemental information is available, such as documented ecological restoration projects, the three-update requirement is waived.

FALLOW OR IDLE

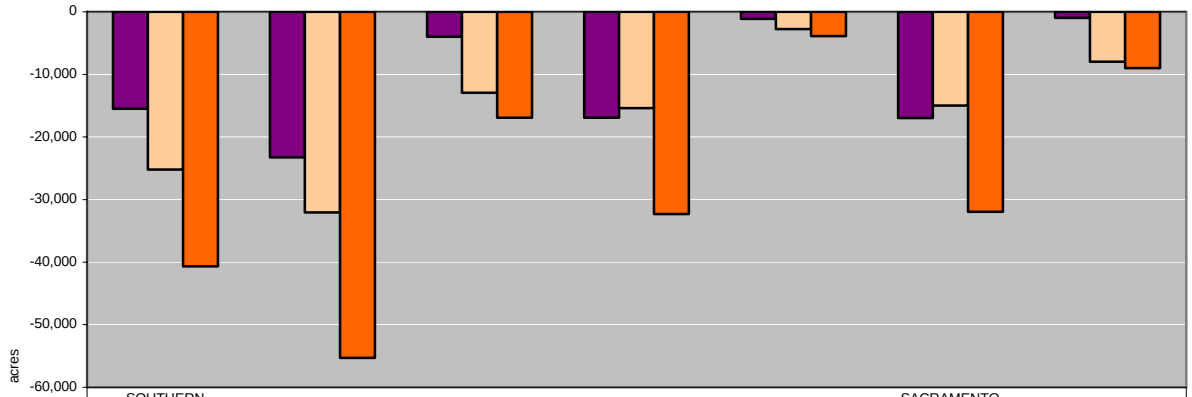
Agricultural land is often allowed seasonal rest or is managed with crop rotation cycles.

FMMP uses the 'three update cycle' tracking system to minimize the impact of these fluctuations on farmland conversion statistics.

Annual crop reports or census statistics will vary from FMMP data because of FMMP's longer-term monitoring orientation.

Reclassifications from irrigated to Grazing and Farmland of Local Importance affected 111,300 acres during the 2002 update (Figure 11 and Appendix C-2). Riverside County accounted for 12% of this conversion type, and Tulare County had

FIGURE 11
LAND REMOVED FROM IRRIGATED AGRICULTURE 2000-2002



	SOUTHERN CALIFORNIA	SAN JOAQUIN VALLEY	CENTRAL COAST	SAN FRANCISCO BAY	SIERRA FOOTHILL	SACRAMENTO VALLEY	NORTH STATE
To Other Land	-15,507	-23,247	-3,983	-16,909	-1,109	-16,947	-978
To Local, Grazing	-25,178	-32,035	-12,929	-15,408	-2,768	-14,989	-7,993
Total acres Removed	-40,685	-55,282	-16,912	-32,317	-3,877	-31,936	-8,971

10% of the total. In addition to land idling, the figure in Tulare County represents conversions to dairies. Contra Costa, Fresno, and Sacramento counties each had downgrades from irrigated in excess of 5,000 acres. In Contra Costa County, idling primarily occurred on the San Joaquin Delta islands of Jersey and Bradford, along with Webb and Holland Tracts – these islands may be part of planned ecological restoration or water storage projects. In Fresno and Sacramento counties the declines were more scattered, but anticipated urban developments such as the Metro Air Park in Sacramento accounted for significant portions of the change. As a whole, about 9% fewer acres were downgraded in this manner statewide compared to the 1998-2000 update.

Conversions from irrigated agriculture to Other Land are less common than those to grazing or dryland farming categories, but many are more permanent in nature. This held true during the current as well as prior update cycles, though reclassifications into Other Land were 34% higher during the 2002 update (78,680 vs 58,780 acres). The Rural Land Mapping Project will support more specific documentation of land undergoing this conversion type in future updates.

Notable instances of change in 2002 involved Liberty Island in Solano and Yolo counties, where nearly 4,000 acres had become tidally flooded and are not planned for reclamation. Ecological restoration efforts continued to be responsible for the bulk of conversion to Other Land in Butte and Glenn counties, as well as nearly 1,000 acres in Tulare County.

RURAL LAND USES

Conversions to Other Land occur for numerous reasons.

The Rural Land Mapping Project will allow more direct analysis of changes to Other Land—please see p 10.

Land idling also resulted in conversions to Other Land, due to a combination of the 40-acre minimum for grazing and the specifics of a county's Farmland of Local Importance definition - Kern, Riverside, and Tulare counties had significant acreages associated with this type of reclassification.

Expansion of sand and gravel operations, or other mining facilities, occurred in counties ranging from Riverside to Sonoma. Sand and gravel resources are required for infrastructure development throughout the state.

New or expanded confined animal agricultural facilities[2] were common in Merced and other San Joaquin Valley counties, but also occurred as far north as Glenn County.

Finally, these conversions can be linked to the first time use of high-resolution imagery in some counties, which supports more detailed delineation. Napa County was a

[2] In some counties, such as Tulare, confined animal facilities (dairies, feedlots, poultry houses, aquaculture) are classified as Farmland of Local Importance (Local). Each county's Local definition is available in Appendix D.

primary example of this phenomenon, as improving vineyard boundaries in the hills caused shifts between Unique Farmland and Other Land - in net terms, there was no agricultural land loss. On a more widespread basis, low-density residential areas in individual units of 10-25 acres were better documented using the new resources.

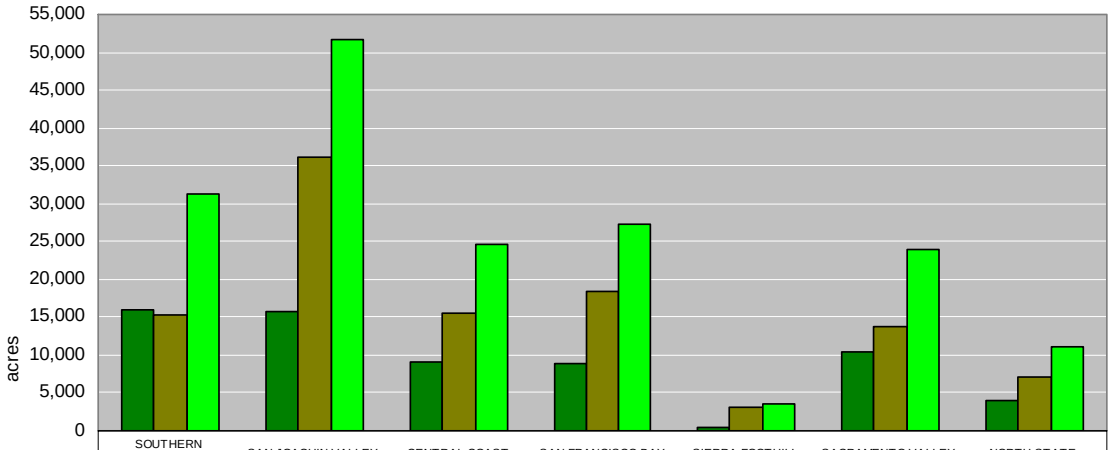
Land is converted to irrigated agricultural use either when dry pastures or native vegetation are converted or when idled land is brought back into production. Market forces are a likely reason landowners make an investment in new- or upgraded-agricultural facilities. Conversions to irrigated categories increased by 3% relative to the 1998-2000 period (Figure 12). The majority of new irrigated land (63%) did not meet the criteria for Prime Farmland.

The size and land use dynamics of the San Joaquin Valley continue to make it the leader in this conversion type. In some instances formerly farmed land was brought back in to production, usually for annual crops or alfalfa. Along the Sierra foothills, orchards were planted on grasslands in many Valley counties. In Kern County, nearly 1,700 acres of the change occurred in the Antelope Valley area - this may reflect land that became irrigated earlier but was not documented due to incomplete imagery coverage.

Los Angeles County covers the southern part of Antelope Valley, and increases in irrigated acreage there are associated with baby carrots and potatoes - the continuation of a trend noted in the 1998-2000 update. New wells and other investments were made by landowners to meet the market demand for convenience foods such as prepackaged baby carrots. Citrus groves and nurseries were other commonly added agricultural uses in Southern California counties.

In the Sacramento Valley, conversions to irrigated classes were similar to the pattern of

FIGURE 12
CONVERSIONS
TO IRRIGATED
FARMLAND
2000-2002

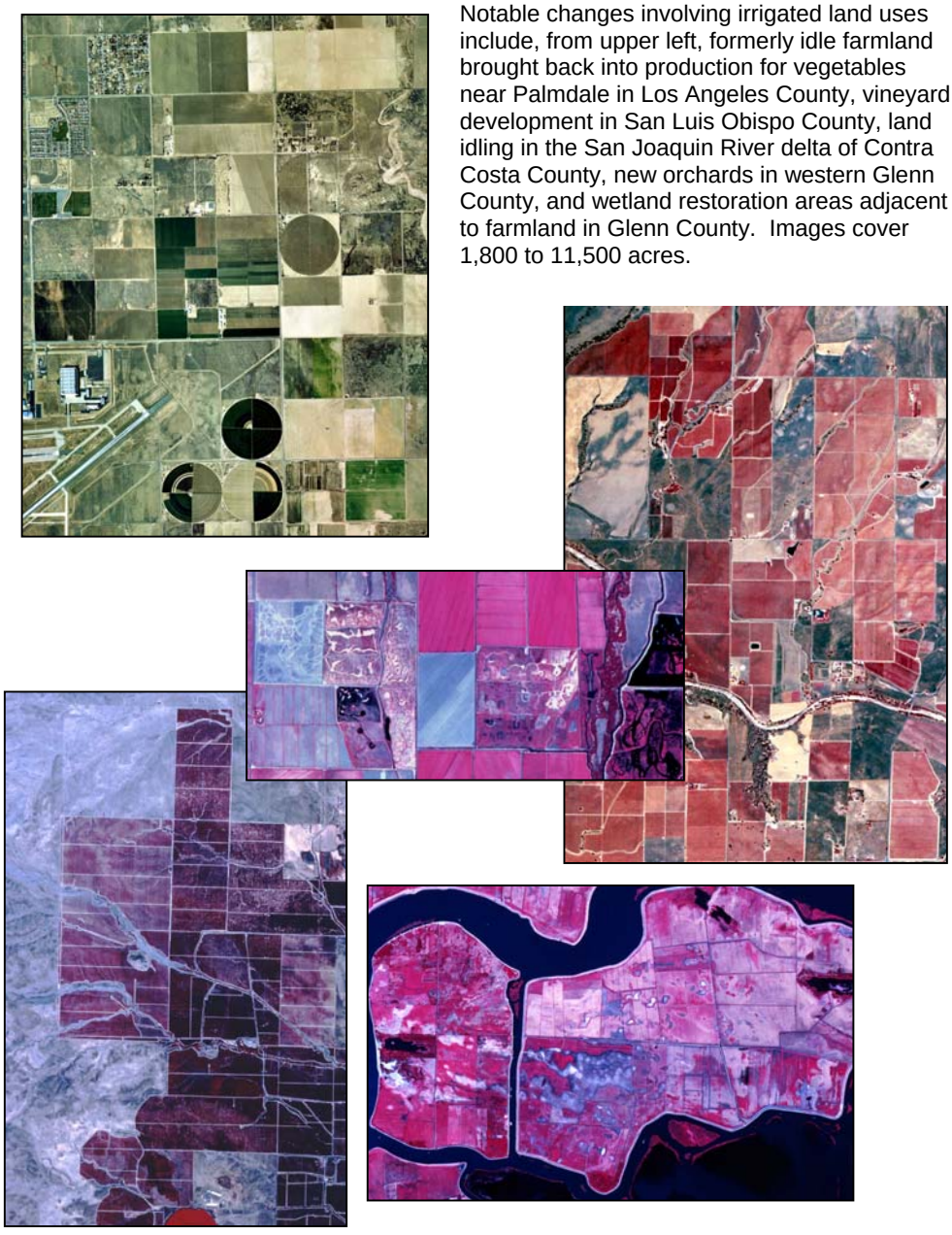


	SOUTHERN CALIFORNIA	SAN JOAQUIN VALLEY	CENTRAL COAST	SAN FRANCISCO BAY	SIERRA FOOTHILL	SACRAMENTO VALLEY	NORTH STATE
To Prime	15,872	15,648	9,017	8,885	443	10,341	4,052
To S, U, I	15,343	36,125	15,522	18,353	3,128	13,658	7,136
Total Conversions to Irrigated	31,215	51,773	24,539	27,238	3,571	23,999	11,188

prior updates. Glenn County had large orchard additions on the eastern slope of the coast range, while Yolo County's largest augmentations occurred as the result of foothill vineyard development.

The Central Coast represented the largest variation between updates, where irrigated land development was about 60% of the 1998-2000 total, primarily as a result of the slowdown in vineyard planting. San Luis Obispo led the four-county region with just over 11,000 acres converted to irrigated uses between 2000-02.

FIGURE 13
AGRICULTURE
AIR PHOTO
EXAMPLES



Notable changes involving irrigated land uses include, from upper left, formerly idle farmland brought back into production for vegetables near Palmdale in Los Angeles County, vineyard development in San Luis Obispo County, land idling in the San Joaquin River delta of Contra Costa County, new orchards in western Glenn County, and wetland restoration areas adjacent to farmland in Glenn County. Images cover 1,800 to 11,500 acres.

Net Land Use Change

Between 2000 and 2002, urban land in California expanded by 92,750 acres (145 square miles), a 1.6% increase compared to the 1998-2000 period. Prime Farmland accounted for 21% of the urbanization, and 8% occurred on other irrigated classes.

The net irrigated farmland loss, at 53,963 acres (Appendix C, Table C-3), was only slightly higher than the Prime Farmland loss (47,172 acres; statewide summary Table 3). This is due to the increase in Unique Farmland (13,116 acres) as an offset to decreases in Prime Farmland, Farmland of Statewide Importance and Interim irrigated acreage. Agricultural development on poorer soils took the form of orchards, vineyards, and to a lesser degree, ornamental or annual crops.

The patterns of land use and conversion vary widely by region and by county. Riverside, Tulare, Sacramento, and San Bernardino counties are present on both the top urbanizing (Table 2) and largest net losses of irrigated land (Table 5) lists in 2002. Other counties having the greatest declines in irrigated acreage are affected by land idling and ecological restoration projects (Contra Costa, Sutter, Solano, Imperial) or combinations of the above factors along with confined animal agriculture facilities or rural residential uses (Fresno, Stanislaus).

TABLE 5
LARGEST NET DECREASES IN IRRIGATED FARMLAND

Decreases of Irrigated Land

Top 10 Counties - net acres

1998-2000		2000-2002	
Riverside	-13,535	Riverside	-12,597
Kern	-12,291	Tulare	-10,098
San Diego	-11,092	Contra Costa	-6,447
Sacramento	-8,837	Sacramento	-5,810
Tulare	-8,664	Sutter	-5,480
Fresno	-6,399	Solano	-5,404
San Bernardino	-5,964	Fresno	-5,396
Butte	-5,685	San Bernardino	-5,154
Sutter	-4,876	Imperial	-2,713
Tehama	-4,323	Stanislaus	-2,682

TABLE 6
LARGEST NET INCREASES IN IRRIGATED FARMLAND

Increases of Irrigated Land

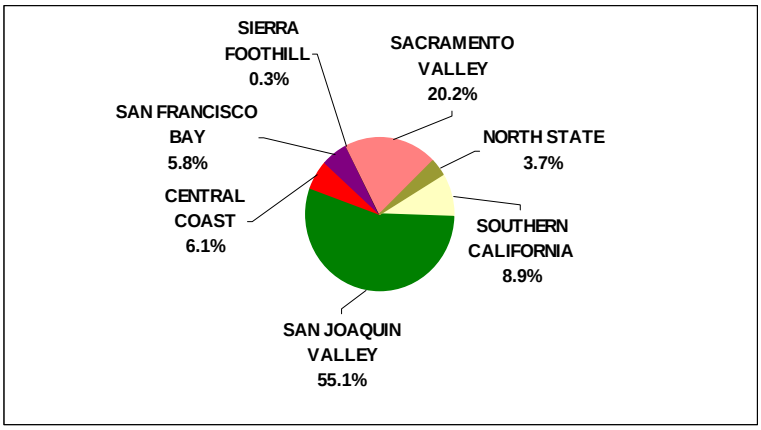
Top 10 Counties - net acres

1998-2000		2000-2002	
Monterey	14,611	San Luis Obispo	7,189
San Luis Obispo	9,724	Glenn	4,593
Sonoma	8,702	Merced	3,757
Santa Barbara	6,204	Los Angeles	3,513
Kings	4,455	Napa	2,193
Los Angeles	4,215	Monterey	1,536
Napa	3,534	Nevada	1,125
Stanislaus	3,472	Siskiyou	1,121
Madera	2,271	Sonoma	1,052
Lake	2,119	Modoc	834

Land use conversions also involve temporal trends, which are particularly notable in the counties with irrigated land increases (Table 6). Although vineyard-growing areas continued to assume many of the top ranks in this conversion category, acreages were substantially smaller during the 2002 mapping than in 2000. Counties with orchard additions in foothill areas (Glenn, Merced) and the reactivation of idle land for high value annual crops (Los Angeles) were responsible for a large component of the increase. Nearly two-thirds of the land brought into irrigated uses did not meet the qualifications for Prime Farmland.

The 2000-2002 data reflected increased urbanization in inland counties compared with the 1998-2000 period, most notably a 76% increase in the San Joaquin Valley. Home to the vast majority of California's Prime Farmland (Figure 13), the Valley contains a number of rapidly growing cities.

FIGURE 14
DISTRIBUTION OF PRIME FARMLAND 2002



Estimates by the state Department of Finance[3] predict that population will more than double in the San Joaquin Valley between 2000 and 2040. This will provide ongoing challenges for planners, agriculturalists, and citizens as communities seek to balance demographic changes with the conservation of the state's most valuable agricultural resources. FMMP will continue to support informed decisionmaking by producing accurate and timely data on these resources and the trends affecting them.

[3] From 3.2 to 6.9 million residents;
http://www.dof.ca.gov/HTML/DEMOGRAP/DRU_Publications/Projections/P3/P3.htm