



Executive Summary

PRIME FARMLAND, AND IMPORTANT FARMLAND AS A WHOLE, DECREASED BY RECORD AMOUNTS DURING THE 2002-2004 PERIOD. URBANIZATION WAS RESPONSIBLE FOR 60% OF FARM AND GRAZING LAND LOSSES.

Farm and grazing lands in California decreased by nearly 267 square miles (170,982 acres) between 2002 and 2004 as documented by the Farmland Mapping and Monitoring Program (FMMP). The highest-quality agricultural soils, known as Prime Farmland, comprised 46% of the loss (78,575 acres). Accelerated urban development in the San Joaquin Valley and other inland locations contributed to a 10% increase in statewide urbanization relative to the 2000-02 period (101,825 and 92,750 acres, respectively).

The FMMP biennial mapping survey covers approximately 91% of the privately owned land in the state (45.9 million acres) in 48 counties. Land use information is gathered using air photos, land management data, and other information which is combined with soil quality data in a geographic information system (GIS) to produce maps and statistics. The earliest data for most counties is from 1984.

Both higher urbanization rates and a larger share of new urban lands for inland counties characterized development patterns during the 2004 mapping cycle. Ten counties accounted for 65% of all urbanization, led by Riverside and San Bernardino at 23% of the statewide total. Three San Joaquin Valley counties (Kern, Stanislaus, and Fresno) captured 16% of the total, while counties along the coast (San Diego and Orange) and in the Sacramento area (Placer and Sacramento) accounted for 11% and 10%, respectively. Contra Costa County was the sole San Francisco Bay area representative on the top urbanizing list, with less than 4% of the statewide increase.

Urbanization in the San Joaquin Valley increased by 10% compared with the 2002 update. Kern County had the largest increase, 37%, and ranked third among all counties for development between 2002 and 2004 (8,610 acres). The San Joaquin Valley as a whole represented the largest acreage of Prime Farmland to urban conversion; 12 % of all new urban land in California had been classified as Prime in San Joaquin Valley counties. While 41% of new urban areas in Kern County derived from Prime Farmland, Tulare (73%) and Stanislaus (70%) counties had the highest ratios of Prime to urban land conversion.

DOCUMENTATION

Detailed reports describing change in each county are available on the FMMP web site:

conservation.ca.gov/dlrp/fmmp

Housing was the largest component of new urban acreage, with developments ranging from small infill sites to planned community units of 600 acres or more. Commercial uses (shopping, offices) and community facilities (schools, parks) occurred in concert with the residential developments. Large site-specific developments included warehouse distribution facilities (Kern, Riverside, and San Bernardino counties), and institutions such as Kern Valley State Prison (Kern County).

Commodity markets and other factors impact land management decisions, causing shifts both in and out of irrigated agricultural use. Conversion from grasslands to orchards, vineyards, and specialty crops were frequent in the late 1990s and early 2000s, but slowed significantly between the 2002 and 2004 updates (from 173,523 to 80,598 acres). Most of the newly irrigated areas were along the Sierra or Coast range foothills, or in high desert valleys of Southern California. Two-thirds of the land brought into irrigated uses did not meet Prime Farmland criteria.

Land was removed from irrigated categories--to uses aside from urban--at almost the same rate as the prior update (189,980 acres in 2000-02 and 188,109 acres in 2002-04). This includes land idling, non-irrigated cropping, conversion to wildlife areas, low-density residential uses, mining, or confined animal agriculture facilities. Land idling and dry cropping were most prevalent along the trough and western side of the San Joaquin Valley. Idling was also common at the perimeter of many cities in the rapidly urbanizing counties.

Expansions of wildlife areas or changes in how they are managed also impacted agricultural land totals. In the largest example, data from Siskiyou County's multiple refuges was used to document a net decrease of nearly 17,000 acres of irrigated land in recent years, nearly half of which continues to support seasonal grazing. Smaller conversions of this type occurred in Butte, Colusa, and Fresno counties.

Rural residential areas and confined animal agriculture facilities expanded in four San Joaquin Valley counties that are covered by the more detailed Rural Land Mapping categories. This pilot project, ranging from Stanislaus to Fresno counties, subdivided the miscellaneous Other Land category into four new classes to better document non-urban conversions. Between 2002-04, confined animal agriculture acreage increased by 11% (to 39,435 acres), mostly for dairies. Rural residential acreage grew by 2.5% (to 80,543 acres), with the highest percentage increase in Merced County. Vacant land and nonagricultural vegetation increased by less than 2% each.

Nearly 40% of conversions out of agricultural uses statewide were to Other Land in the most recent update, an indicator that agricultural land use dynamics in California are more complex than urbanization alone. Given today's demographic and environmental challenges, statewide detail on rural land use conversions may prove valuable in the conservation of critical farm and open space resources.



The Farmland Mapping and Monitoring Program

DOCUMENTING CHANGES IN AGRICULTURAL LAND USE SINCE 1984.

The goal of the Farmland Mapping and Monitoring Program (FMMP) is to provide consistent, timely and accurate data to decision makers for use in assessing present status, reviewing trends, and planning for the future of California's agricultural land resources.

Approximately 91% of the privately owned land in the state (45.9 million acres) was mapped this update cycle by FMMP. The survey area is shown on the following page (Figure 1). Each map is updated every two years, providing an archive for tracking land use change over time.

Using a geographic information system (GIS), air photos, local input, and other information, FMMP combines soil quality data and current land use information to produce Important Farmland Maps. The program is funded through the state's Soil Conservation Fund. This fund receives revenues from Williamson Act contract cancellation fees.

Technology advances have supported significant data improvements in recent years, including the incorporation of digital soil survey data and the use of detailed digital imagery. Similarly, the number of products available has grown with the requirements of users - including printed maps, statistics, field reports, and GIS data. The maps and data are used in environmental studies to assess the impacts of proposed development on agricultural and open space land. In recent years, FMMP data has become widely used in urbanization and environmental modeling, and comparative land cover studies.

In addition, only land that is classified in one of the four main agricultural categories on Important Farmland maps is eligible for enrollment in Farmland Security Zone (FSZ) contracts. Under FSZ contracts, landowners receive substantial property tax benefits for committing to keep their land in agricultural use for 20-year periods.

This is the tenth Farmland Conversion Report produced by the FMMP, the current report covering the 2002 to 2004 period.

REFERENCES

FMMP is authorized under California Government Code §65570.

Current and historic data can be accessed at the FMMP web site: conservation.ca.gov/dlrp/fmmp

Farmland Mapping and Monitoring Program Survey Area 2004

The 'Irrigated Farmland' area below includes Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and the Irrigated Land category in Interim mapping areas. The 'Dryland Farming and Grazing Land' designation includes the Farmland of Local Importance and Nonirrigated Farmland classes as well as the extent of Grazing Land.

Locations shown as 'Out of Survey Area' may be added in the future, while those indicated as 'Local, State, and Federal Owned Land' are not planned for incorporation. Examples of government owned land include National Parks, Forests, and Bureau of Land Management lands. Please note that small areas of public land are included in the FMMP survey area - generally appearing as 'Other Land' on the map below.

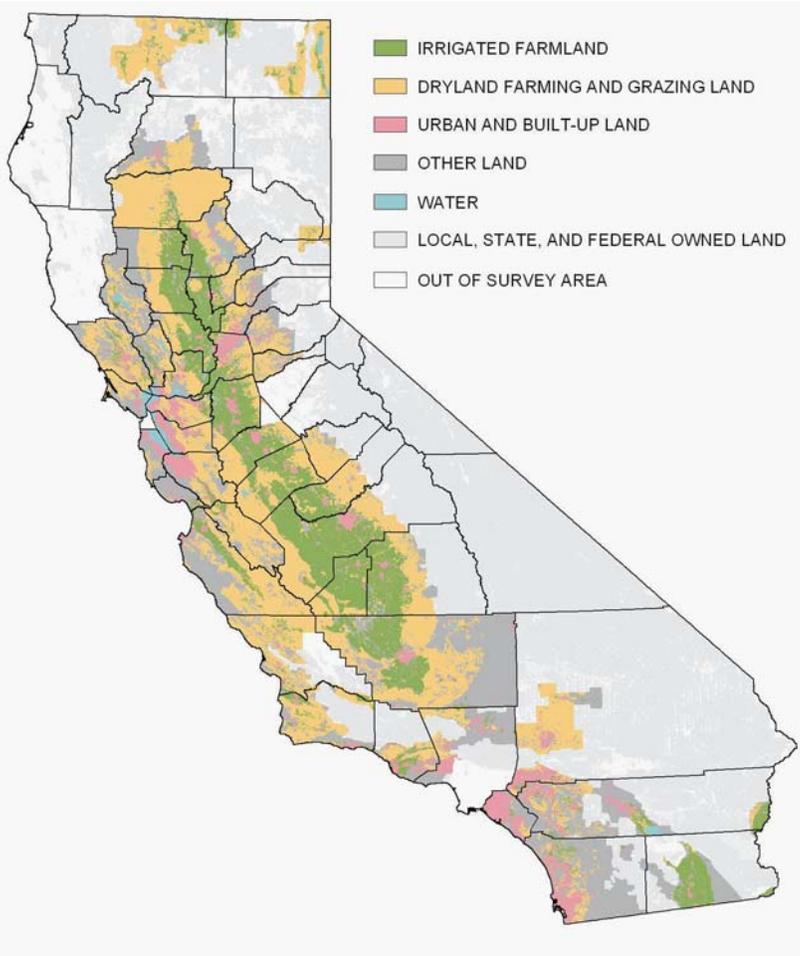


FIGURE 1
FMMP
SURVEY AREA

Important Farmland Map Categories

About 95% of FMMP's study area is covered by U.S. Department of Agriculture (USDA) modern soil surveys. Technical ratings of the soils and current land use information are combined to determine the appropriate map category. The minimum land use mapping unit for all categories is 10 acres unless otherwise noted.

Prime Farmland has the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

Farmland of Statewide Importance is similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

Unique Farmland consists of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include nonirrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

Farmland of Local Importance is land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee. The definitions for this category are detailed in Appendix E of this report.

Grazing Land is land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities.

Urban and Built-up Land is occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. Common examples include residential, industrial, commercial, institutional facilities, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, and water control structures.

Other Land is land not included in any other mapping category. Common examples include low density rural developments; vegetative and riparian areas not suitable for livestock grazing; confined animal agriculture facilities; strip mines, borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land. More detailed data on these uses is available in Rural Land Use Mapping counties (page 6).

Water - perennial water bodies with an extent of at least 40 acres.

RURAL LAND USE MAPPING

The Rural Land Mapping project provides more map and statistical detail than standard Important Farmland Map products by delineating Other Land into four subcategories, as described below.

Rural Residential and Rural Commercial includes residential areas of one to five structures per ten acres, farmsteads, small packing sheds, unpaved parking areas, composting facilities, firewood lots, campgrounds, and recreational water ski lakes.

Vacant or Disturbed Land consists of open field areas that do not qualify for an agricultural category, mineral and oil extraction areas, and rural freeway interchanges.

Confined Animal Agriculture includes aquaculture, dairies, feedlots, and poultry facilities.

Nonagricultural and Natural Vegetation covers heavily wooded, rocky or barren areas, riparian and wetland areas, grassland areas which do not qualify for Grazing Land due to their size or land management restrictions, and small water bodies. Constructed wetlands are also included in this category. The Rural Land classes are not designed for interpretation as habitat. Geographic data on the extent of habitat for various species may be available from other state and federal entities.

INTERIM MAPPING

Interim categories allow land use change monitoring until soil data becomes available. The categories below substitute for the categories of Prime, Statewide, Unique, and Local; all other categories are as described above. With the 2004 release of Butte County soil data, Kern County remains the only area where Interim categories apply.

Irrigated Farmland is land with a developed irrigation water supply that is dependable and of adequate quality. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

Nonirrigated Farmland is land on which agricultural commodities are produced on a continuing or cyclic basis utilizing stored soil moisture. Wheat and other grains are the most common nonirrigated crops.

OPTIONAL DESIGNATION

Land Committed to Nonagricultural Use is defined as existing farmland, grazing land, and vacant areas that have a permanent commitment for development. This optional designation allows local governments to provide detail on the nature of changes expected to occur in the future. It is available both statistically and as an overlay to the Important Farmland Map.



2002-2004 Improvements

SOIL DATA ADDED TO BUTTE COUNTY; NEW MAP UPDATING AND SOIL DATA INCORPORATION PROCESS ADOPTED STATEWIDE; AND WEB SITE IMPROVEMENTS.

Each update cycle provides FMMP the opportunity to make improvements to the Important Farmland data, in order to achieve increased accuracy, process efficiency, or better reporting capabilities. During the 2002-04 update, improvements included the upgrade of Butte County from Interim to Important Farmland status, a streamlined method of incorporating digital soil data to the maps, better internal tracking systems for land in transition, and a more user-friendly web site interface. Many of these improvements were funded with a temporary augmentation FMMP received from the 2000 Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Act (Proposition 13).

Butte County upgrade. The completion of the USDA-Natural Resources Conservation Service (NRCS) soil survey for Butte County allowed FMMP to upgrade more than one million acres from Interim to Important Farmland status. This was carried out on the 2004 data, and the map is in draft status pending development of a Farmland of Local Importance category by local agencies.

County conversion statistics for 2002-2004 (Table A-45) are available using Interim classes, while draft 2004 statistics appear at left.

Butte County	
2004 Draft Important Farmland Map Acreages	
Prime Farmland	197,556
Farmland of Statewide Importance	22,324
Unique Farmland	24,958
Agricultural Land Not Otherwise Classified*	6,104
Grazing Land*	400,368
Urban and Built-up Land	43,819
Other Land*	355,500
Water Area	22,624
TOTAL AREA INVENTORIED	1,073,253

* During review process, the development and approval of a Farmland of Local Importance definition may impact the amount of land in these categories.

TABLE 1
BUTTE COUNTY
IMPORTANT
FARMLAND 2004

Digital mapping methodology – streamlined and complete statewide.

There are significant challenges to developing Important Farmland maps on a timely, consistent, and accurate basis. Taking advantage of evolving technology while meeting FMMP's biennial update mandate is one of the most creative aspects of the program. During the 2004 update, a new database for documenting land use conversion was developed and implemented. Staff now have an interface of pull down menus and codes to track the status of land in transition, allowing more detailed reporting and improved quality control of the field mapping process.

Digital soil data incorporation.

Concurrent with adoption of the new notation system, incorporation of NRCS digital soil survey data was completed statewide. The soil information used is NRCS' most detailed data level, referred to as SSURGO. This improvement allows FMMP to accurately represent the original soil maps and any modifications NRCS subsequently makes to the data. Because NRCS continues to revise and republish digital soil data, a system to compare SSURGO editions and determine whether the differences are sufficient to warrant adoption of the new edition was also developed.

DIGITAL SOILS

During the 2004 update, 24 counties had digital soil data incorporated for the first time. Fourteen counties had soil data replaced due to NRCS revisions affecting agricultural categories, and ten counties did not require replacement.

The SSURGO incorporation process impacts acreage totals for agricultural categories and Other Land. The impact is noticeable when comparing the 2002 acreages in this report to those published in the 2000-2002 report. While typically small, these variations may be a few thousand acres in specific instances - especially if Farmland of Local Importance definitions involve a soil component. In future updates, new releases of SSURGO data will be incorporated in a county if Important Farmland agricultural categories would be impacted by 100 acres or more.

Please contact FMMP with questions about these statistical anomalies and how to best use the published data from this or prior reports.

Web site search feature

As the volume of FMMP statistics, reports, and GIS data has increased, the need for a more intelligent system for retrieving the information became obvious. Working with the Department's Office of Technology Services, FMMP implemented a search feature that links users to all data available by county or region in early 2006.



Understanding the Data

LOCATING AND INTERPRETING THE CALIFORNIA FARMLAND CONVERSION REPORT'S TABULAR DATA AND GRAPHICS.

Important Farmland information is developed on an individual county basis, taking two years to map the 45.9 million acre survey area. This report begins with each county's information, compiling it in various ways to produce the assessment in Chapter 4.

County conversion tables - Appendix A. Includes acreage tallies and conversion data for individual counties. The figure below describes how conversion tables are constructed.

2002 and 2004 county acreage tallies - Appendix B. Values for the individual years (Tables B-1 and B-2) are extracted from Part I of the tables in Appendix A. These tables also indicate the proportion of each county within the FMMP survey area—mapping typically ends at the boundaries of National Forests, for example. Table B-3 shows this same information for 2004, grouped by region.

Statewide conversion summary - Chapter 4, Table 4. This table summarizes material from all three sections of the Appendix A information. The table now includes data on the Interim mapping areas.

TABLE 4
LAND USE CONVERSION SUMMARY (1)
2002-2004 Land Use Conversion

DEPARTMENT OF CONSERVATION Division of Land Resource Protection PART I Land Use Totals and Net Changes		1998-00 ACREAGE CHANGES					Farmland Mapping and Monitoring Program PART II Land Committed to Nonagricultural Use				
LAND USE CATEGORY	TOTAL ACREAGE INVENTORIED		ACRES LOST (-)	ACRES GAINED (+)	TOTAL ACREAGE CHANGED	NET ACREAGE CHANGED	LAND USE CATEGORY	TOTAL ACREAGE			
	2002	2004									
Prime Farmland (2)	3,873,658	3,834,070	84,183	44,595	128,778	-39,588	PART II: Land expected to be developed (voluntary submission by local governments).	167,142			
Farmland of Statewide Importance						-12,213					
Unique Farmland (2)						24,676					
Farmland of Local Importance						-6,030					
IMPORTANT FARM						-33,155					
Grazing Land						-52,193					
AGRICULTURAL LAND						-85,348					
Urban and Built-Up Land	2,535,516	2,608,038	13,755	86,277	100,032	72,522					
Other Land	9,011,609	9,018,671	54,898	61,960	116,858	7,062					
Water Area	637,377	643,141	491	6,255	6,746	5,764					
TOTAL AREA INVENTORIED	33,340,497	33,340,497	402,472	402,472	804,944	0					
PART III Land Use Conversion from 2002 to 2004											
LAND USE CATEGORY	Prime Farmland	Farmland of Statewide Importance	Unique Farmland	Farmland of Local Importance	Subtotal Important Farmland	Grazing Land	Total Agricultural Land	Urban and Built-Up Land	Other Land	Water Area	Total Converted To Another Use
Prime Farmland (2)	to: --	4,446	3,071	34,383	41,900	11,385	53,285	16,661	12,162	2,075	84,183
Farmland of Statewide Importance											45,548
Unique Farmland											29,644
Farmland of Local Importance											80,914
IMPORTANT FARM											40,289
Grazing Land											93,039
AGRICULTURAL LAND											33,328
Urban and Built-Up Land											13,755
Other Land											54,898
Water Area	to: 0	8	0	22	30	119	149	81	261	--	491
TOTAL ACREAGE CONVERTED	to: 44,595	33,335	54,320	74,884	207,134	40,846	247,980	86,277	61,960	6,255	402,472
FOOTNOTES:											
1. This table provides information on large or unusual conversions and other descriptive material.											
2. Figures in this table are rounded to the nearest acre.											

FIGURE 2
CONVERSION
TABLE
STRUCTURE

PART I:
Indicates county area mapped & overall change in each category.

PART III:
Raw data from GIS provides detail on every acre of change that occurred. Changes result from revising the two-year-old linework based on new air photos and field verification.

County and regional conversion summaries – Appendix C. The counties are grouped into geographic regions as seen in Figure 3.

Table C-1 Classifies sources of new urban land for the period, by county and region.

Table C-2 Identifies conversions in or out of agriculture aside from urbanization, capturing the ebb and flow of agricultural land use change over time.

Table C-3 Documents net agricultural change from all factors, grouped by region and ranked by acreage.

Much of the analysis in Chapter 4 is based on the data in Appendix C.

Rural Land Use conversion tables – Appendix D. Contains data on changes associated with a more detailed subdivision of the Other Land category. Data for four pilot counties is currently available.

Simplifying assumptions for analyses – In order to conduct comparative analysis, certain simplifying assumptions have been made. For example, Unique Farmland is considered to be an irrigated farmland category, even though a small percentage of land within the Unique Farmland category supports high value nonirrigated crops, such as some coastal vineyards.

Conversely, Farmland of Local Importance is considered to be a nonirrigated category although it also supports some irrigated pasture on lower-quality soils.

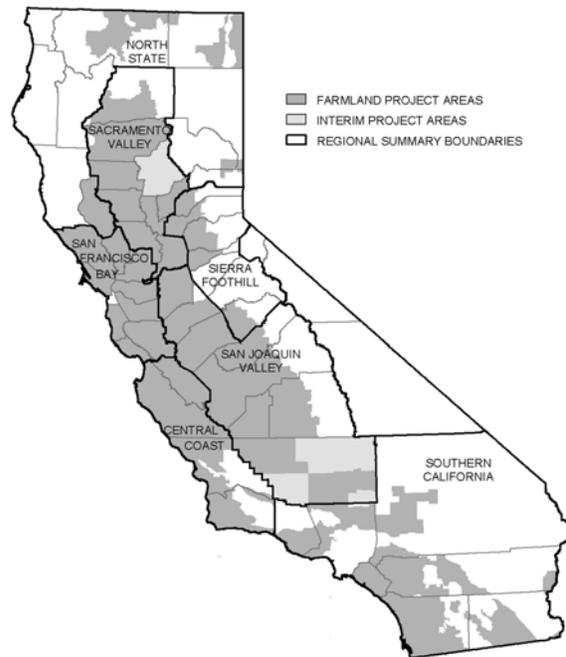


FIGURE 3
FMMP REGIONS

STATISTICAL NOTES

Residual polygons, those less than the 10- or 40-acre minimum land use mapping unit, are a natural result of the mapping process as changes are made to adjacent areas. In order to maintain map unit consistency, these small units are absorbed into the most appropriate adjacent land use type. This process results in shifts among categories that may appear

anomalous in the conversion statistics - such as urban to agriculture or Prime Farmland to Farmland of Statewide Importance.

Minimum units of analysis within the GIS database are 0.3 acres for land use changes. When digital soil information is incorporated from USDA, soil units of less than 1.0 acre have been merged with the next most appropriate category.



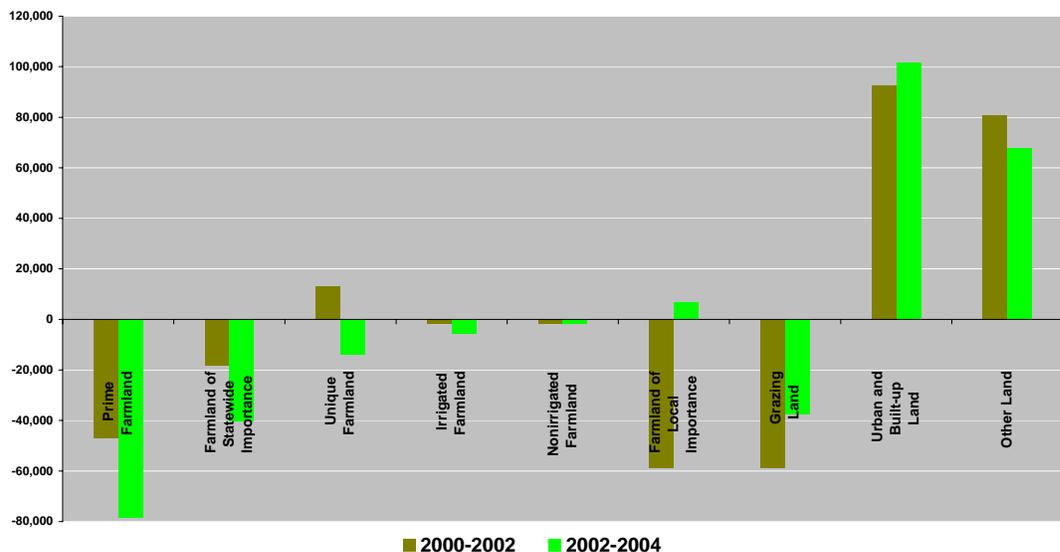
Land Use Conversion, 2002-2004

STATEWIDE URBANIZATION EXCEEDED 100,000 ACRES FOR THE FIRST TIME SINCE THE 1990 UPDATE. MULTIPLE FACTORS LED TO THE LARGEST DROP IN PRIME FARMLAND SINCE MAPPING BEGAN IN 1984.

California experienced record agricultural land decreases between 2002 and 2004, as overall urbanization increased by 10% relative to the 2000-02 period (101,825 and 92,750 acres, respectively). Yet urbanization alone did not account for the 78,575-acre net loss in Prime Farmland between 2002 and 2004. Land idling, ecological restoration projects, and other conversions also contributed to a net loss of 138,644 acres of irrigated land statewide.

One trend that had helped offset agricultural land losses in the last decade has declined in recent years. This was the conversion of grazing and pasture areas to vineyards, orchards and specialty crops. Agricultural upgrades of this kind totaled 80,598 acres between 2002 and 2004, less than half of the 2000-02 acreage. The recent changes in each Important Farmland category are seen in Figure 4, below.

FIGURE 4
STATEWIDE
ACREAGE
CHANGE



Information in this chapter is based on statewide Table 4 (page 13), summary tables in Appendix C, and county field analyst reports. Field analyst reports are available on the FMMP web site.

Urbanization

Development continued to focus on inland locations during the 2002-04 period, at higher rates than had occurred in the prior update (Table 2). Only two of the top ten urbanizing counties, San Diego and Orange, were coastal counties, while the “inland empire” counties of Riverside and San Bernardino accounted for 23% of urban land increases statewide. The San Joaquin Valley had three counties in the top ten (Kern,

Stanislaus, and Fresno), and the Sacramento area posted two in the top ranks (Sacramento and Placer counties). Contra Costa County was the sole representative of the San Francisco Bay area in the fastest urbanizing group.

Historically the San Francisco Bay Area ranked second in urbanization to Southern California. The San Joaquin Valley moved into the second rank of this conversion type

during the 2000-02 update; and in 2002-04, the Sacramento Valley’s urbanization also bypassed that of the Bay Area (Table 3). Sacramento County’s newly urbanized acreage more than doubled between the two updates; this coupled with increased urbanization in Shasta and Tehama counties resulted in accelerated growth for the region. Also of note in Table 3 is the difference in urbanizing acreage for the Central Coast and North State regions between the two updates. The 2004 statistics are more representative of historic urbanization rates; while the 2002 figures represent improvements made to the data with the first time use of detailed digital imagery.

TABLE 2
TOP OVERALL
URBAN RANKS

Urbanization from All Categories			
Top Ten Counties - net acres			
2000-2002		2002-2004	
San Bernardino	12,133	Riverside	14,406
San Diego	8,807	San Bernardino	9,314
Riverside	8,050	Kern	8,610
Kern	6,265	San Diego	6,130
San Joaquin	6,211	Sacramento	5,726
Placer	5,408	Placer	5,328
Orange	4,609	Contra Costa	4,987
Tulare	2,832	Stanislaus	4,361
Sacramento	2,741	Orange	4,191
Sonoma	2,711	Fresno	3,362

TABLE 3
REGIONAL
URBANIZATION
RANKS

Regional Urbanization Ranking			
net acres			
2000-02		2002-04	
Southern California	35,182	Southern California	40,036
San Joaquin Valley	22,655	San Joaquin Valley	24,845
San Francisco Bay	10,443	Sacramento Valley	13,102
Sierra Foothill	8,662	San Francisco Bay	11,859
Sacramento Valley	8,528	Sierra Foothill	9,797
Central Coast	4,099	Central Coast	2,176
North State	3,181	North State	10

Housing was the largest component of new urban acreage, with developments ranging from small infill sites, to density increases in rural areas, to planned community units of 600 acres or more. Commercial uses (shopping, offices) and community facilities (schools, parks)

occurred in concert with the residential developments. New water control facilities, landfill expansions, and energy plants occupied more than 1,250 acres in the ten counties listed above during the 2002-04 period. Golf course and resort developments were less extensive than in the prior update, but did account for more than 2,250 acres of conversion in the fastest-urbanizing counties.

TABLE 4
CALIFORNIA FARMLAND CONVERSION SUMMARY (1)
2002-2004

DEPARTMENT OF CONSERVATION
Division of Land Resource Protection

Farmland Mapping and Monitoring Program

PART I

Land Use Totals and Net Changes

LAND USE CATEGORY	2002-2004 ACREAGE CHANGES				NET ACREAGE CHANGED	
	TOTAL ACREAGE INVENTORIED		ACRES LOST (-)	ACRES GAINED (+)		
	2002 (2)	2004				
Prime Farmland	5,154,782	5,076,207	108,028	29,453	137,481	-78,575
Farmland of Statewide Importance	2,731,723	2,691,258	56,850	16,385	73,235	-40,465
Unique Farmland	1,289,076	1,275,092	49,024	35,040	84,064	-13,984
Irrigated Farmland	542,422	536,802	9,120	3,500	12,620	-5,620
Nonirrigated Farmland	9,076	7,461	1,721	106	1,827	-1,615
Farmland of Local Importance	2,848,040	2,854,727	92,452	99,139	191,591	6,687
IMPORTANT FARMLAND SUBTOTAL	12,575,119	12,441,547	317,195	183,623	500,818	-133,572
Grazing Land	16,390,842	16,353,432	107,900	70,490	178,390	-37,410
AGRICULTURAL LAND SUBTOTAL	28,965,961	28,794,979	425,095	254,113	679,208	-170,982
Urban and Built-up Land	3,277,833	3,379,658	8,665	110,490	119,155	101,825
Other Land	12,902,121	12,969,764	79,139	146,782	225,921	67,643
Water Area	704,435	705,949	195	1,709	1,904	1,514
TOTAL AREA INVENTORIED	45,850,350	45,850,350	513,094	513,094	1,026,188	0

PART II

Land Committed to Nonagricultural Use

LAND USE CATEGORY	TOTAL ACREAGE 2004
Prime Farmland	19,319
Farmland of Statewide Importance	3,469
Unique Farmland	6,058
Irrigated Farmland	7
Nonirrigated Farmland	0
Farmland of Local Importance	29,389
IMPORTANT FARMLAND SUBTOTAL	58,242
Grazing Land	56,023
AGRICULTURAL LAND SUBTOTAL	114,265
Urban and Built-up Land	0
Other Land	45,898
Water Area	0
TOTAL ACREAGE REPORTED	160,163

PART III Land Use Conversion from 2002 to 2004

LAND USE CATEGORY	Prime Farmland	Farmland of Statewide Importance	Farmland of Local Importance			Grazing Land	Total Agricultural Land	Urban and Built-up Land	Other Land (3)	Total Converted To Another Use
			Unique Farmland	Farmland of Local Importance	Subtotal Important Farmland					
Prime Farmland	to: 1,968	84	1,968	40,702	42,754	15,785	58,539	20,771	28,718	108,028
Farmland of Statewide Importance	to: 103	--	411	28,657	29,171	4,644	33,815	7,055	15,980	56,850
Unique Farmland	to: 1,031	183	--	13,722	14,936	18,089	33,025	2,972	13,027	49,024
Irrigated Farmland	to: --	--	--	--	18	5,246	5,264	335	3,521	9,120
Nonirrigated Farmland	to: --	--	--	--	338	1,186	1,524	0	197	1,721
Farmland of Local Importance	to: 13,284	8,348	14,701	--	36,333	11,646	47,979	18,621	25,852	92,452
IMPORTANT FARMLAND SUBTOTAL	14,418	8,615	17,080	83,081	123,550	56,596	180,146	49,754	87,295	317,195
Grazing Land	to: 6,292	3,394	12,844	6,859	30,792	--	30,792	20,671	56,437	107,900
AGRICULTURAL LAND SUBTOTAL	20,710	12,009	29,924	89,940	154,342	56,596	210,338	70,425	143,732	425,095
Urban and Built-up Land	to: 990	463	345	988	2,851	1,055	3,906	--	4,759	8,665
Other Land (3)	to: 7,753	3,913	4,771	8,211	1,782	12,839	39,269	40,065	--	79,334
TOTAL ACREAGE CONVERTED	to: 29,453	16,385	35,040	99,139	183,623	70,490	254,113	110,490	148,491	513,094

(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.
(2) Due to the incorporation of digital soil survey data (SSURGO) during this update, acreages for farmland, grazing, and other land use categories may differ from those published in the 2000-2002 California Farmland Conversion Report.
(3) Also includes conversions to and from Water, which was primarily due to completion of Olivenhain Reservoir in San Diego County and reclamation of former gravel pits into permanent water bodies in Alameda County.

More site-specific in nature were warehouse distribution facilities (Kern, Riverside, and San Bernardino counties), and large institutional uses such as Kern Valley State Prison (approximately 500 acres, Kern County).

In the San Joaquin Valley (Valley), overall urbanization increased by 10% in 2002-04 relative to the 2000-02 period. However, urbanization of irrigated land increased 28% between the two timeframes, and Prime Farmland urbanization increased by 26%

(from 9,412 to 11,869 acres). Six Valley counties were among the top ten in the urbanization of irrigated farmland (Table 5). Tulare and Stanislaus counties had the highest ratios of urbanization on Prime Farmland, at 73% and 70%, respectively.

New to any of the top urbanizing lists was Imperial County. This was the first update in which its urbanization exceeded 1,000 acres; more than 88% of which took place

on what had been irrigated farmland (1,047 out of 1,186 acres). Housing, water treatment and geothermal facilities, and border-related industrial uses near Calexico were the primary new land uses.

The relative location and type of land converted to urban uses is shown in Figure 5 (page 15). 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 County dominates the Sacramento Valley figures. The Sacramento Area Council of Governments (SACOG) region encompasses these three counties as well as Sutter, Yolo, and Yuba counties. The SACOG region represented 15% of urbanization occurring statewide between 2002 and 2004.

Statewide, 19% of new urban land between 2002 and 2004 had been Prime Farmland, and an additional 9% came from other irrigated categories. Conversion of Prime Farmland continues to be highest in the San Joaquin Valley, more than three times higher than in Southern California during the period. Urbanization on irrigated farmland increased by 9% compared with the 2000-02 update cycle.

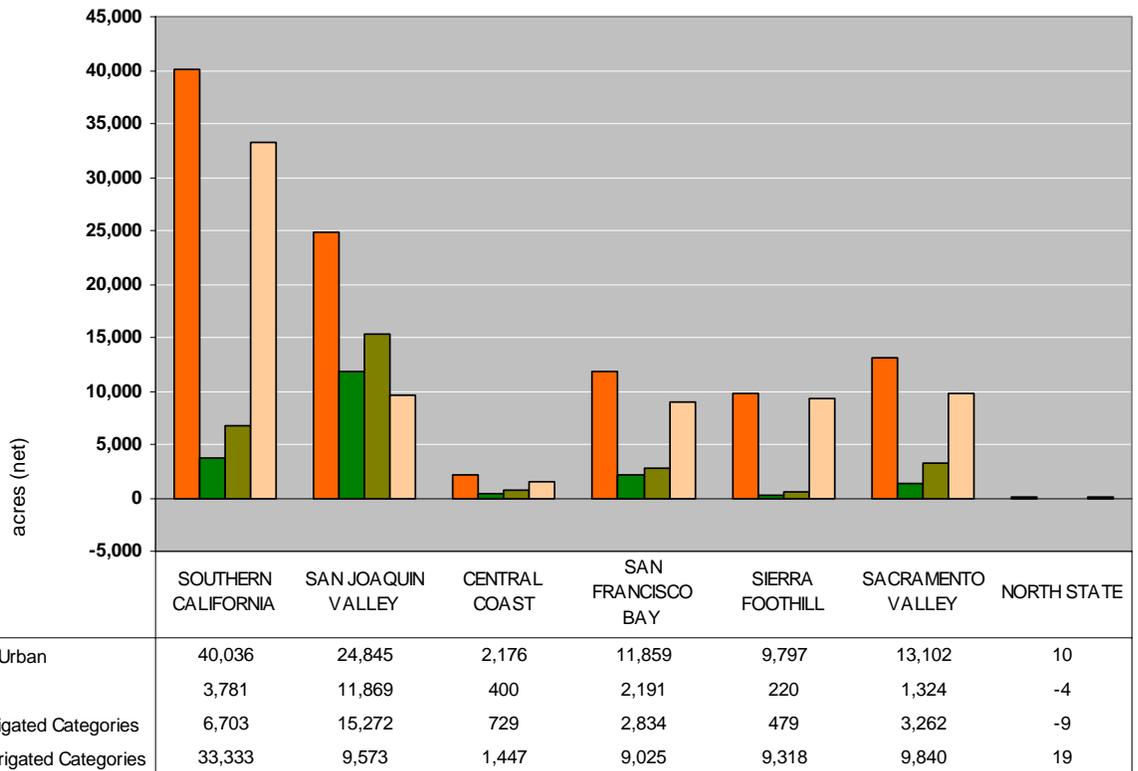
Development on Grazing Land and Farmland of Local Importance areas jumped by 34% compared with the prior update (37,249 and 27,728 acres, respectively). In many rapidly growing counties, Farmland of Local Importance represents idled farmland located on soils that would qualify for Prime Farmland were they still in production.

TABLE 5
TOP IRRIGATED
TO URBAN
RANKS

Irrigated Farmland to Urban Top Ten Counties - net acres			
2000-2002		2002-2004	
San Joaquin	4,518	Kern	4,275
Riverside	2,488	Stanislaus	3,460
San Bernardino	2,195	Riverside	2,485
Tulare	1,861	San Joaquin	2,239
Stanislaus	1,778	Fresno	2,081
Orange	1,547	Sacramento	1,431
Kern	1,212	Tulare	1,377
Fresno	1,147	San Bernardino	1,243
Yolo	960	Merced	1,058
Santa Clara	858	Imperial	1,047

The sources of new urban land by county are enumerated in Appendix C-Table C-1.

FIGURE 5
SOURCES OF
URBAN LAND
2002-2004

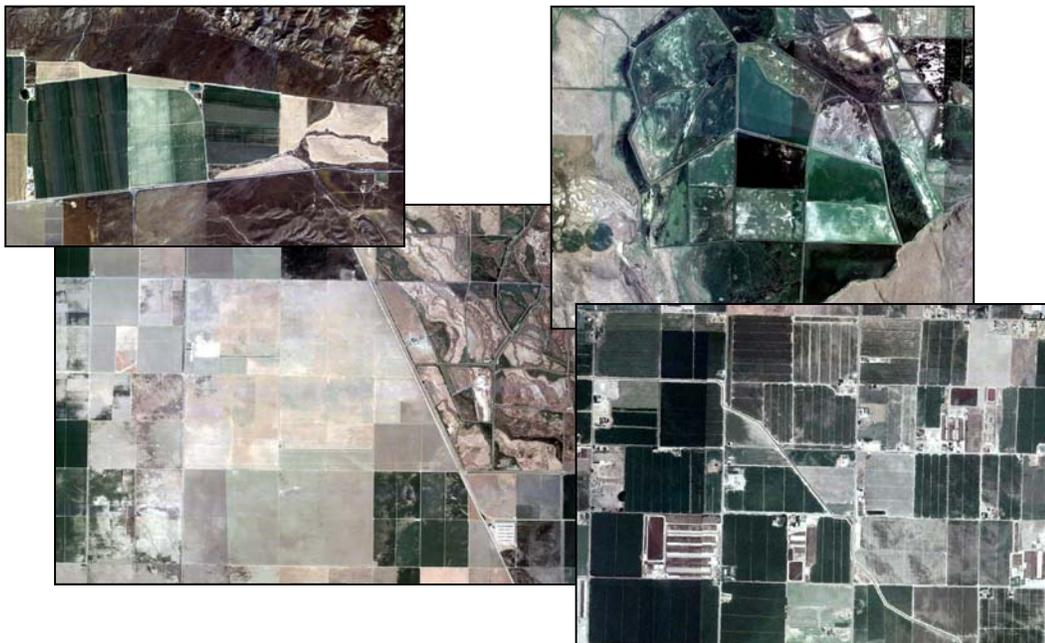


Urbanization images include, clockwise from right: Riverside County--subdivisions adjacent to agriculture in Corona, and next to low-density residential land in Temecula. In Kern County--old and new state prisons in Delano, and subdivisions in the Bakersfield area. Images cover 1,700 to 2,600 acres.



FIGURE 6
2002-2004
AIR PHOTO
EXAMPLES

Examples of other trends in agriculture, clockwise from bottom left: idled farmland in Fresno County, irrigated vegetables in Cuyama Valley (San Luis Obispo County), Lower Klamath National Wildlife Refuge in Siskiyou County, and dairies interspersed with crops in Stanislaus County. Images cover 1,500 to 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 also influence land management. 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 C-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 removed 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

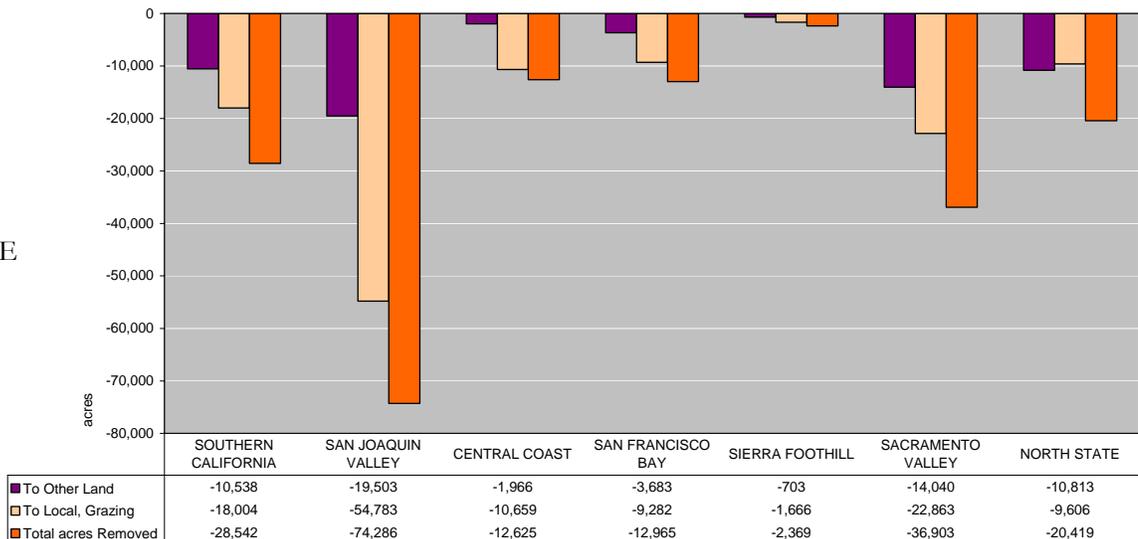
Agricultural land is often allowed seasonal rest or is managed with crop rotation cycles.

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 126,863 acres during the 2004 update (Figure 7 and Table C-2). The San Joaquin Valley accounted for 43% of this conversion type, led by Fresno, Kern, and

FIGURE 7
LAND
REMOVED
FROM
IRRIGATED
AGRICULTURE
2002-2004



Merced counties at more than 10,000 acres each. Land idling was the most prevalent reason for these conversions, particularly along the trough and western side of the Valley and in the vicinity of the cities of Fresno and Clovis. Land being used on a long-term basis for nonirrigated grains was also predominant in the western parts of these counties. Additionally, dairies are a component of Fresno County's Farmland of Local Importance definition, and conversions from irrigated use to dairies totaled nearly 1,400 acres in the county between 2002 and 2004.

Seven additional counties had downgrades from irrigated categories in excess of 5,000 acres. Anticipated urban development leading to land idling predominated in counties such as Riverside, Sacramento, and San Diego. Siskiyou County's reclassification was primarily related to the Lower Klamath National Wildlife Refuge, now managed as a complex of wetlands, seasonal grazing, and commercial agricultural leases. In San Luis Obispo and Tehama counties, land that has been idled was removed from the irrigated classes—some of this change might have physically taken place during prior updates but imagery gaps prevented reclassification until comprehensive data was available. Tulare County represents a mix of the above factors as well as dairy development. As a whole, about 14% more land was downgraded in this manner statewide compared with the 2000-02 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 type of reclassification impacted 61,246 acres between 2002 and 2004, a decrease from 78,680 acres during the prior update. A more than 13,000-acre decline in this conversion type in the San Francisco Bay Area was primarily responsible for the difference. Large conversions to wetlands and adjustments associated with the use of improved imagery had impacted Bay Area counties in 2002.

Notable instances of change in 2004 involved Siskiyou County, where more than 10,000 acres within the wildlife refuge system are no longer farmed. Land had been idled in these locations for a number of update cycles; GIS data from individual refuges was used to delineate their current status. Ecological restoration efforts were also responsible for the bulk of conversion to Other Land in Butte and Colusa counties, and one conversion associated with the federal Wetlands Reserve Program encompassed 1,700 acres in Fresno County. Idling of small parcels and rural residential development impacted numerous counties in the state. Improved imagery along riparian areas and feedlot enlargements in Imperial County led to a 6,000-acre conversion to Other Land during the 2004 update.

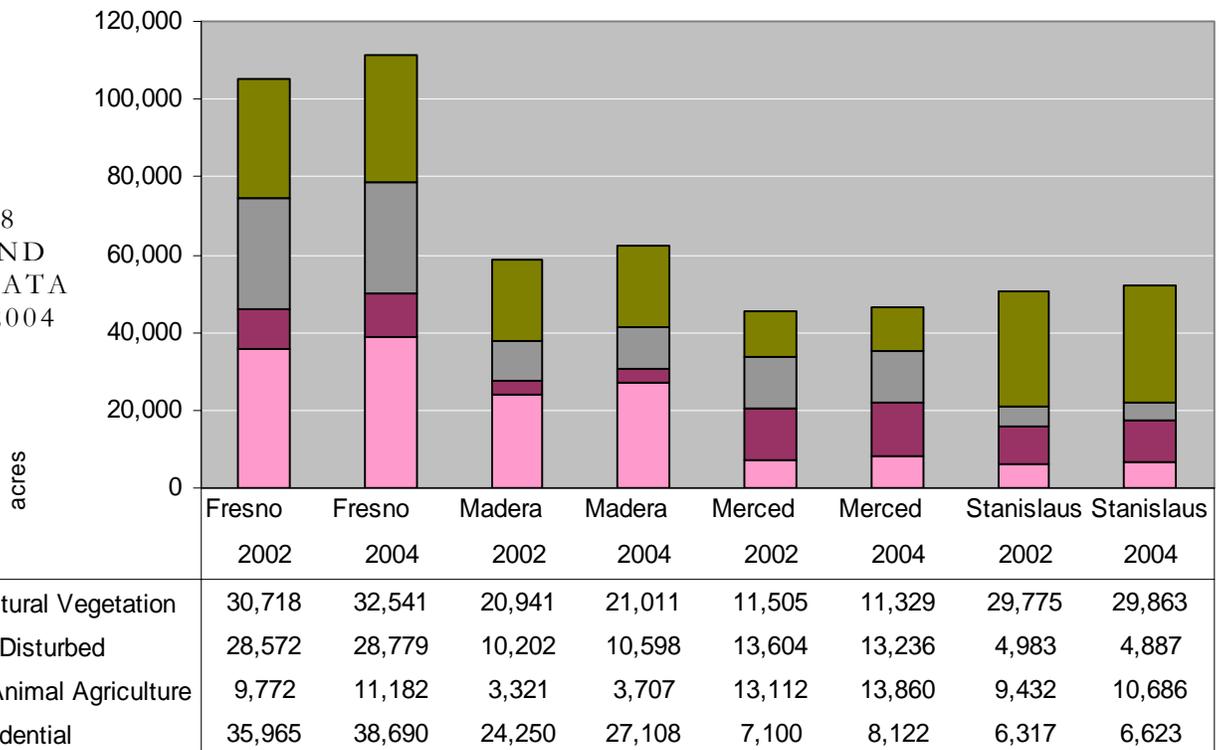
The San Joaquin and Sacramento valleys had the largest conversions to Other Land, at 32% and 23% of the total, respectively. While land idling and rural residential development impacted both regions, ecological restoration areas were more prominent

in the Sacramento Valley and confined animal agricultural facilities¹ comprised a larger component of the San Joaquin Valley conversions.

Changes associated with Other Land can be analyzed in greater detail in the four San Joaquin Valley counties covered by Rural Land Use Mapping data (Figure 8 and Appendix D tables). There was a 5% acreage increase associated with Rural Land Use categories during the 2004 update; individual increases were 3% each in Merced and Stanislaus counties, 5% in Fresno County, and 6% in Madera County.

Confined animal agriculture facilities increased by the largest proportion, 11%, and in 2004 occupied a total of 39,435 acres in the four counties. New and expanded dairies were primarily responsible for the increase, particularly in Fresno and Stanislaus counties (1,410 and 1,254 acre increases, respectively). In all four counties, the bulk of these facilities were developed on irrigated farmland; Stanislaus and Merced counties saw larger proportions of conversion from Prime Farmland to confined animal agriculture facilities while lesser quality soils were impacted more frequently in Fresno

FIGURE 8
RURAL LAND
MAPPING DATA
2002 AND 2004



¹ 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 E.

and Madera counties.

Rural Residential and Commercial Lands occupied 80,543 acres as of 2004 for the pilot counties. Rural residential acreage increased by 9% relative to the initial 2002 mapping, however, the increase associated with actual construction was closer to 2.5% for the 2002-04 period. The remainder of the acreage increase was due to greater mapping detail in the forested parts of Fresno and Madera counties, as well as documentation of commercial and farmstead areas at the minimum mapping scale in all four counties. Comparisons for this category are discussed in terms of the adjusted figures in Table 6.

**RURAL AND URBAN
LAND EXTENT**

As of 2004, urban land occupied 231,986 acres in the pilot counties. Rural Residential and Commercial occupied 80,543 acres.

Expansion of rural residential areas has the potential to impact agricultural land at higher rates per capita than urban development.

Stanislaus County had the smallest increase in rural residential and commercial uses during the 2004 update, 215 acres, but Prime Farmland was proportionally impacted to a higher degree than in the other pilot counties. Merced County's increase was the largest proportionally, 6.7%, with the greatest concentration of

new development along the Highway 99 corridor near the existing cities of Delhi, Livingston, Atwater, and Merced.

The remaining Rural Land Use classes, Vacant or Disturbed Land

Rural Residential and Commercial, 2002-2004
acres and percent

County	2002*	2002, adjusted*	2004	Change	
Fresno	35,965	37,930	38,690	760	2.0%
Madera	24,250	26,650	27,108	458	1.7%
Merced	7,100	7,615	8,122	507	6.7%
Stanislaus	6,317	6,408	6,623	215	3.4%
Totals	73,632	78,603	80,543	1,940	2.5%

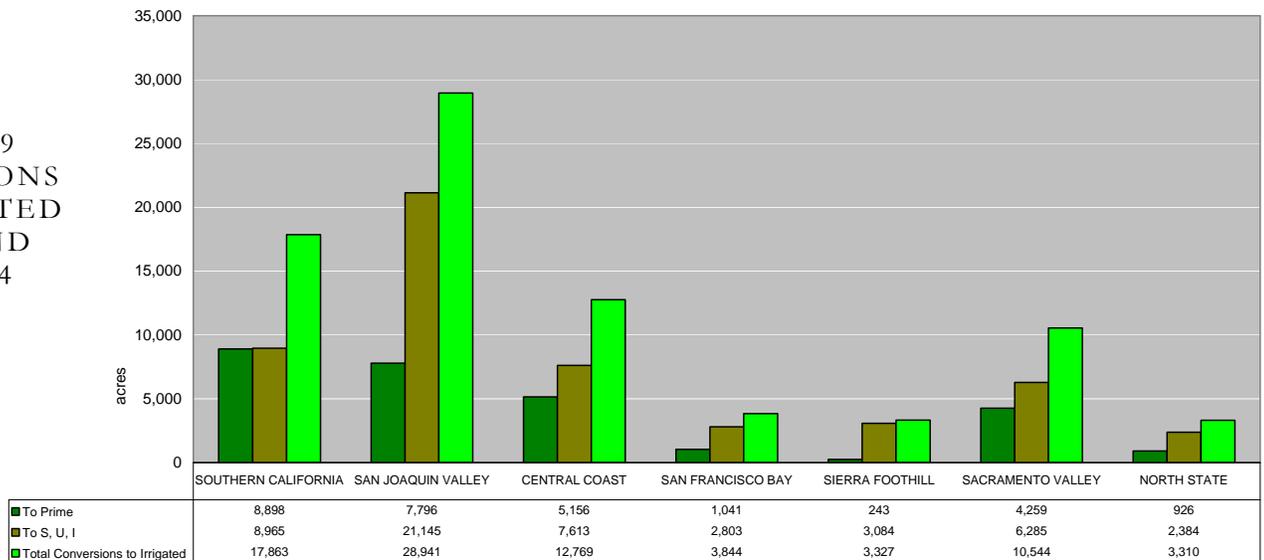
* 2002 acres adjusted to reflect additional detail and improvements made during initial update for the category. This primarily involved low-density residential areas in forested areas and small commercial and farmstead units throughout the pilot counties.

and Nonagricultural Vegetation, saw much smaller rates of change between 2002 and 2004, increasing by less than 2% each. Individual counties experienced small net losses or gains in these classes, with the most notable change being the Wetlands Reserve Program lands in Fresno County discussed above. More detail and conversion patterns can be expected to emerge as the Rural Land Mapping effort continues in the years ahead.

TABLE 6
CHANGES AND
IMPROVEMENTS
TO RURAL
RESIDENTIAL
DATA

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. Conversions to irrigated categories decreased by 54% relative to the 2000-02 period, from 173,523 to 80,598 acres (Figure 9). Part of this decrease can be attributed to boundary adjustments that occurred in 2002 due to the first time use of detailed imagery for map updating. Nearly two-thirds of new irrigated land (65%) did not meet the criteria for Prime Farmland.

FIGURE 9
CONVERSIONS
TO IRRIGATED
FARMLAND
2002-2004



The San Joaquin Valley accounted for 36% of this conversion type between 2002 and 2004. Along the Sierra foothills, orchards and alfalfa were planted on grasslands in many Valley counties. In San Joaquin County, vineyard development near Lodi and Clements was the most common agricultural upgrade. Southern California continued to show strength in specific agricultural sectors, with 22% of the newly irrigated land. The south state increase is mostly the result of high desert valleys being planted to potatoes, carrots, onions, and alfalfa. Smaller units of citrus, avocados, date orchards, and nurseries were also developed in the seven-county region.

Two Central Coast counties, San Luis Obispo and Santa Barbara, had irrigated land expansions greater than 5,000 acres. The Cuyama Valley, which is split between the two counties, is one of the valleys referred to above that have experienced increased irrigated use in recent years. Most irrigated increases here occurred on the Santa Barbara side of the valley. In addition, annual crop areas, vineyards, and orchards were expanded in various parts of both counties.

Net Land Use Change

Urban land in California expanded by 101,825 acres (159 square miles) between 2002 and 2004, a 10% increase compared to the 2000-02 period. Prime Farmland accounted for 19% of the urbanization, and 9% occurred on other irrigated classes.

The net irrigated farmland loss, 138,644 acres (Appendix C, Table C-3), was more than twice as large as it had been during the prior update (53,963 acres). Prime Farmland loss this cycle was the largest in FMMP's history (78,575 acres; Table 4).

Three factors contributed to the accelerated farmland loss: increased urbanization in the San Joaquin Valley and other inland locations, increases in the amount of land now idled or devoted to nonirrigated grains, and a much lower rate of conversion into irrigated farmland uses. While irrigated land losses to Other Land, Farmland of Local Importance, and Grazing Land were nearly identical in both updates (189,980 acres in 2000-02 and 188,109 acres in 2002-04), land moving into irrigated uses from these classifications dropped by 54% (from 173,523 to 80,598 acres).

TABLE 7
LARGEST NET
DECREASES IN
IRRIGATED
FARMLAND

Decreases of Irrigated Land Top Ten Counties - net acres			
2000-2002		2002-2004	
Riverside	-12,597	Fresno	-17,748
Tulare	-10,098	Kern	-17,478
Contra Costa	-6,447	Siskiyou	-16,979
Sacramento	-5,810	Tulare	-9,637
Sutter	-5,480	Merced	-9,626
Solano	-5,404	Tehama	-9,251
Fresno	-5,396	Riverside	-7,078
San Bernardino	-5,154	Sacramento	-6,990
Imperial	-2,713	Imperial	-4,281
Stanislaus	-2,682	San Diego	-4,101

Five of the counties on the top-urbanizing list (Table 2) are also present in the largest net losses of irrigated land list (Table 7) for 2004: Fresno, Kern, Riverside, Sacramento, and San Diego. Other counties with large decreases in irrigated acreage were affected by ecological restoration projects (Siskiyou) or a combination of land idling, rural development, and confined animal agriculture facilities development (Tulare, Merced, Tehama, Imperial).

TABLE 8
LARGEST NET
INCREASES IN
IRRIGATED
FARMLAND

Increases of Irrigated Land Top Ten Counties - net acres			
2000-2002		2002-2004	
San Luis Obispo	7,189	Santa Barbara	3,032
Glenn	4,593	Sierra Valley	1,815
Merced	3,757	Los Angeles	1,085
Los Angeles	3,513	Madera	1,035
Napa	2,193	Placer	892
Monterey	1,536	Napa	557
Nevada	1,125	Ventura	183
Siskiyou	1,121	San Benito	45
Sonoma	1,052	Marin	13
Modoc	834	Amador	9

There were a total of ten counties with net irrigated land increases during the 2004 update (Table 8 and Appendix C, Table C-3). This is a significant drop from recent updates in which vineyard development had been a trend. Reactivation of idle land for high value annual crops was

largely responsible for increases in Los Angeles and Santa Barbara counties; while small perennial crop or alfalfa additions occurred in Madera, Napa, Placer, and Ventura counties. Improved imagery in the Sierra Valley led to more accurate delineation of irrigated pastures this update. Nearly two-thirds of the land brought into irrigated uses did not meet the qualifications for Prime Farmland.

The San Joaquin Valley region experienced the largest irrigated land losses between 2002 and 2004, 44% of the statewide net decrease, while the Sacramento Valley accounted for 21% of the total. These regions in turn contain the largest proportions of Prime Farmland in the state (Figure 10).

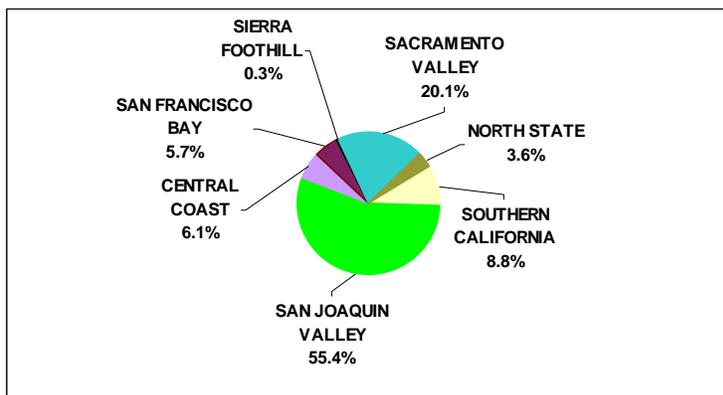


FIGURE 10
DISTRIBUTION
OF PRIME
FARMLAND
2004

Statewide, agricultural land declined by 170,982 acres during the 2002-04 period. Urbanization accounted for 60% of this decrease, while the remaining land was converted to uses that fall into the

miscellaneous Other Land category. Less than one percent of the agricultural land decrease was due to new reservoirs in a number of counties. The high proportion of conversion to Other Land is an indicator that agricultural land use dynamics in California are more complex than urbanization alone.

**Rural Land Counties
Development Comparison**

County	Rural Residential*	
	Urban	% increase
Fresno	3.1%	2.0%
Madera	3.8%	1.7%
Merced	5.6%	6.7%
Stanislaus	7.7%	3.4%

* Rural Residential increase adjusted for technical data improvements. See page 20.

In the four Rural Land Use pilot counties, expansion of confined animal agriculture facilities and rural residential areas were primarily responsible for conversions to Other Land. Rural Residential and Commercial Land occupied 80,543 acres in these four counties in 2004, more than one third the extent of existing urban areas. On a percentage basis, Rural Residential lands increased more rapidly than urban areas in Merced County (Table 9). This represents

construction on small rural parcels as opposed to land subdivision. Overall, acreage devoted to Rural Land Mapping categories increased by 5% during the 2004 update.

Given today's demographic and environmental challenges, statewide detail on rural land use conversions may prove valuable in the conservation of critical farm and open space resources. FMMP's goal remains to support informed planning by producing timely and accurate data on the extent of these resources and the trends affecting them.

TABLE 9
URBAN AND
LOW-DENSITY
DEVELOPMENT
INCREASES
2002-2004