

# **APPENDIX C**

## **Socioeconomic Analysis Rule 4550 (Conservation Management Practices) and Rule 3190 (Conservation Management Practice Plan Fee)**

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# 1. EXECUTIVE SUMMARY

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The purpose of the Conservation Management Practice Program (CMP Program) is to limit fugitive PM10 emissions from agricultural sources. The CMP Program is applicable to agricultural sources that grow crops or are Animal Feeding Operations (AFOs) such as dairy, feedlot, chicken, and turkey operations.

According to this report, there are approximately 25,808 farms in the San Joaquin Valley region as of the year 2002. Of this amount, 21,084 farms grow crops. These farms harvest approximately 4.4 million acres, which, in turn, produced an estimated \$9.7 billion in agricultural value. Of the 25,808 farms, 4,465 produce a variety of livestock. The value of livestock (cattle, dairy, poultry, etc.) is estimated at \$4.8 billion. In total, the agricultural sector in the San Joaquin Valley region produced \$15.1 billion in value in the year 2002.

Of the 21,084 farms that grow crops, 5,916 farms are subject to Rule 4550 and Rule 3190. These farms are at least 100 acres, the threshold above which farms are required to implement CMP Plans. Crop-producing farms affected by the CMP rules will bear a cost that ranges between \$377,700 (in the lower cost alternative) and \$21,156,000 (in the upper cost alternative). In other words, by implementing CMP Plans, farms could save \$377,700, according to the lower cost alternative. Of the 4,465 farms that produce livestock, 1,006 will be subject to Rule 4550 and Rule 3190. Livestock-producing farms affected by the rules will bear a cost that ranges between \$517,000 and \$9,946,000. In aggregate, the cost of the new rules on affected agricultural industries is estimated to range from .005 percent to 1 percent of aggregate profits. Thus, farms affected by Rule 4550 and Rule 3190 will not experience any significant negative impacts as a result of the rules.

The analysis shows that small farms as defined by the USDA are not disproportionately impacted by new Rule 4550 and Rule 3190, as these farms are also exempt from the requirements of the CMP Program to begin with.

## 2. INTRODUCTION

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This report describes the socioeconomic impacts of proposed new rules, called Rule 4550 (Conservation Management Practices) and Rule 3190 (Conservation Management Practices Plan Fee). Following this introduction, the report summarizes Rule 4550 and Rule 3190 and describes the methodology for the socioeconomic analysis. In Section 5, the report describes the economic characteristics of sources affected by the new rules. The sixth section analyzes the socioeconomic impacts of proposed new rules.

The San Joaquin Valley Unified Air Pollution Control District (the District) crafted Rule 4550 to implement what are called Best Available Control Measures (BACM) on agricultural sources, and to achieve PM10 emission reduction to help meet the five percent per year reduction in PM10 emissions target. In addition, the District crafted new Rule 3190 to allow the District to collect fees from the affected agricultural sources. Such fees would be used by the District to offset the administrative and compliance costs of the CMP Program.

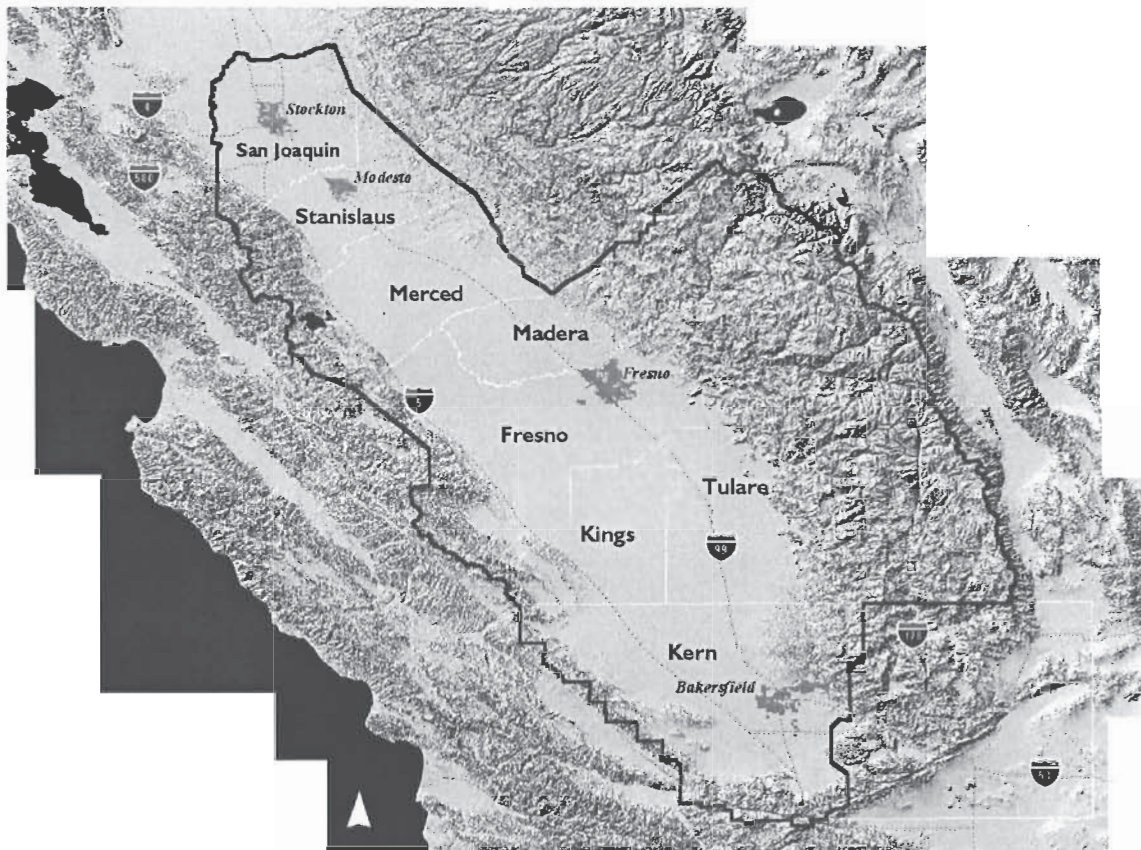
The report is prepared pursuant to the provisions of AB2051 (Section 40728.5 of the California Health and Safety Code), which requires an assessment of socioeconomic impacts of proposed air quality rules. The findings in this report can assist District staff in understanding the socioeconomic impacts of Rules 4550 and 3190, and can assist staff in preparing a refined version of the rule. This is the final draft report that will be presented at a District-sponsored workshop in mid-March, 2004.

For the purposes of consistency, this report refers to stakeholders and their respective agricultural sites and facilities subject to the new rules as “sources”, “affected sources” “affected industries,” or “impacted industries affected by proposed Rule 4550 or Rule 3190.” In short, a “source” is the crop grower or livestock producer subject to the rules.

Figure 1 is a map of the eight-county region that comprises the San Joaquin Valley Unified Air Pollution Control District.

As indicated in the map, Kern County is not completely in the District.

**FIGURE 1**  
**Map of the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD)**



Source: Applied Development Economics

### **3. DESCRIPTION OF PROPOSED NEW RULES**

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The federal government has classified the San Joaquin Valley Air Basin (SJVAB) as a serious non-attainment area for the National Ambient Air Quality Standard (NAAQS) for PM10. As such, the District is required by federal law to implement what are called Best Available Control Measure (BACM) and Best Available Control Technology (BACT) on all significant sources of emissions. In addition, the District is required to show a five percent per year reduction in PM10 or PM10 precursors emissions starting in 2003 until attainment is reached. The District is also required to demonstrate attainment of the NAAQS PM10 standards at the earliest possible date.

The District crafted Rule 4550 to implement BACM on agricultural sources, and to achieve PM10 emission reduction to help meet the five percent per year reduction in PM10 emissions target. In addition, the District crafted new Rule 3190 to allow the District to collect fees from the affected agricultural sources. Such fees would be used by the District to offset the administrative and compliance costs of the CMP Program.

Participation in the CMP Program will be mandatory, but the growers and producers will select CMPs most appropriate for implementation for their respective operations. Growers and producers must select at least one CMP from each of the identified applicable CMP categories, but have no specific individual emission reduction target. Some AFO producers also grow field crops. Those AFO producers must select CMPs for both their field crops and for their AFO. No emission calculations will be required of the growers. The District will provide growers and producers handbooks that will assist them in selecting CMPs and in preparing their respective CMP Plans.

The District proposes a de minimis level of 100 acres above which farms would be required to implement the CMPs contained in their CMP Plan. This level ensures that 90% of the harvested acres in the San Joaquin Valley will implement CMPs. This reduces the administrative burden and program costs while achieving the needed reductions. For AFOs, the District also proposes de minimis levels of 500 mature dairy cows, 190 beef cattle or heifers, 82,000 laying hens, 125,000 chickens (except layers), and 55,000 turkeys.

## 4. METHODOLOGY

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The socioeconomic analysis involves the use of information provided directly by affected sources, as well as secondary data used to describe the industries affected by the proposed new rules. The approach is briefly described below.

ADE began the analysis by preparing a statistical description of the industry groups of which the affected sources are part, analyzing data on the number of jobs, sales levels, the typical profit ratios and other economic indicators for each industry.

This report relies heavily on the most current data available from the State of California's Agricultural Statistical Service, particularly its report called "The County Agricultural Commissioners' Data."<sup>1</sup> In addition, the report relies on data from the US Census' 1997 Agricultural Census, the Minnesota IMPLAN Group, Inc., and the State of California's Employment Development Department Labor Market Information Division.

ADE also relied on the California Department of Food and Agriculture's 2002 Resource Directory, called "California Agriculture: A Tradition of Innovation," which included information on net income. With the information on net income, ADE was able to estimate profit ratios for sources affected by the new rules. ADE calculated ratios of profit per dollar of revenue for affected agricultural industries. The result of the socioeconomic analysis shows what proportion of profits the compliance costs represent. Based on assumed thresholds of significance, ADE discusses in the report whether the affected sources are likely to reduce jobs as a means of recouping the cost of rule compliance or as a result of reducing business operations. To the extent that such job losses appear likely, the indirect multiplier effects of the jobs losses are estimated using a regional IMPLAN input-output model.

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<sup>1</sup> (<http://www.nass.usda.gov/ca/bul/agcom/indexcac.htm>)



## **5. IMPACTED SOURCES SUBJECT TO PROPOSED NEW RULE 4550 AND RULE 3190**

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This section of the socioeconomic analysis describes demographic and economic trends in the San Joaquin Valley region. The first part of this section compares the San Joaquin Valley region against California as a whole and, in so doing, provides a context for understanding demographic and economic changes that occurred within the San Joaquin Valley region between 1997 and 2002. Starting with sub-section 5.2, the second part of this section narrows the focus of the socioeconomic analysis to industries affected by Rules 4550 and 3190. The second part of this section describes the economic characteristics of impacted sources subject to the new rules.

For the purposes of this report, the San Joaquin Valley region is defined as Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare Counties. Data for Kern County in Tables 1 and 2 below are for all of Kern County, although Kern County is only partially in the San Joaquin Valley Unified Air Pollution Control District. Data for Kern County in the rest of the tables starting with Table 3 are for the part of Kern County that is in the San Joaquin Valley Unified Air Pollution Control District.

### **5.1 REGIONAL DEMOGRAPHIC AND ECONOMIC TRENDS**

#### ***Regional Demographic Trends***

The San Joaquin Valley region experienced tremendous population growth during the 1990s. Many came to this area because of affordable housing. As a result, population increased significantly. The eight-county region as a whole increased by 20 percent, from 2.7 million in 1990 to 3.3 million in 2000. While the State of California increased by 14 percent, all the counties in the region experienced faster rates of growth, and two counties grew at rates that were double the State's growth rate, as Table 1 shows. While by many standards Madera County continues to be a small county— at 123,109 residents according to Census 2000—it still experienced a 40 percent growth in population during the last

decade. Kings County grew by 28 percent. As demonstrated in the following section on regional economic trends, the demographic changes that occurred in the San Joaquin Valley region during the 1990s significantly influenced the economy of this eight-county region.

**TABLE 1**  
**Population Growth: San Joaquin Valley Region**  
**1990 - 2000**

	California	San Joaquin Valley Region	Fresno	Kern	Kings	Madera	Merced	San Joaquin	Stanislaus	Tulare
1990	29,760,021	2,742,000	667,490	543,477	101,469	88,090	178,403	480,628	370,522	311,921
2000	33,871,648	3,302,792	799,407	661,645	129,461	123,109	210,554	563,598	446,997	368,021
Change	4,111,627	560,792	131,917	118,168	27,992	35,019	32,151	82,970	76,475	56,100
% Change	14%	20%	20%	22%	28%	40%	18%	17%	21%	18%

Source: US Census, 1990 and 2000

### **Regional Economic Trends**

Economic development practitioners and planners have traditionally divided economies into two broad industrial categories—the economic base and local support industries. Economic base industries are the drivers of local and regional economies in that these industries draw income into a local economy by selling products outside of the local economy, much like the export industries of a national economy. Accrued earnings then circulate throughout the local area in the form of wages and salaries, investments, purchase of fixed assets, and goods and services, generating more jobs and wealth.

The economic base is typically comprised of industries within the manufacturing, minerals-resource extraction, and agricultural sectors. There are also the “local support industries” such as retail or service sectors, the progress of which is a function of the economic base and demographic changes, and more so the latter than the former. As population increases in a given area, demand for services—such as realtors, teachers, healthcare—increases, as does demand for basic retail items like groceries, gas for commuting, or clothing at the local apparel shops.

Agriculture continues to serve as the economic base of the San Joaquin Valley region, exporting goods and produce throughout the nation and globe. Fourteen percent of all

workers in the region are employed by industries within agriculture, as Table 2 shows. However, in 1997, the proportion of workers in agriculture was 19 percent. In fact, over the five year period between 1997 and 2002, employment in agriculture declined by 25 percent.

Between 1997 and 2002, local support industries gained in prominence within the San Joaquin Valley region. The service sector employs the most workers, as a proportion of total employment in the region. As Table 2 shows, the service sector is the largest employment sector in the region, at 250,865 or 22 percent of all jobs. In 1997, services also represented 19 percent of all jobs. Between 1997 and 2002, the proportion of people employed in the services-based sector surpassed the proportion employed by the other major sector, agriculture, which today is a clear second to services. In 1997, these two sectors were in a virtual tie in terms of their respective share of private sector jobs.

Local support industries of construction, retail and F.I.R.E. (finance, insurance, and real estate) increased between 1997 and 2002, by 46 percent, 14 percent and 11 percent respectively. Increases in employment in these industries are consistent with the growth in population in the region.

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**TABLE 2**  
**Employment Profile Of The San Joaquin Valley Region**  
**1997 – 2002**

MAJOR SECTORS	San Joaquin	San Joaquin	San Joaquin	Percent	California	Percent
	Valley Region	Valley Region	Valley Region		Change	
	Employment	Employment	Employment	Change	Distribution,	Change
	1997	2002	2002	1997 to 2002	2002	1997 to 2002
Agriculture	209,733	158,278	14%	-25%	2%	-24%
Mining	2,249	2,156	0.2%	-4%	0.2%	-19%
Construction	41,579	60,520	5%	46%	5%	36%
Manufacturing	115,667	109,280	9%	-6%	12%	-7%
Transportation/Communication/Utilities	45,391	49,400	4%	9%	5%	7%
Wholesale	43,738	44,760	4%	2%	5%	4%
Retail	175,901	200,865	17%	14%	18%	17%
Finance, Insurance and Real Estate	39,273	43,560	4%	11%	6%	12%
Services	211,479	250,640	22%	19%	31%	16%
Government	204,754	240,854	21%	18%	17%	17%
<b>Total Employment</b>	<b>1,089,764</b>	<b>1,160,313</b>	<b>100%</b>	<b>6%</b>		<b>11%</b>

Source: Applied Development Economics, based on data from IMPLAN and California Employment Development Department LMID

The emergence of local support industries in the San Joaquin Valley region mirrors statewide trends, as Table 2 shows. Statewide, retail, construction and services grew by 17 percent, 36 percent and 16 percent between 1997 and 2002. Between 1997 and 2002, total employment in the San Joaquin Valley region increased by 6 percent. Total employment in California grew by 11 percent, which, while positive, was somewhat behind the 1995-2000 statewide total employment growth rate of 18 percent. In short, San Joaquin Valley region's economy has become more diverse, with the growth occurring within population-driven local support industries rather than the export-focused economic base industries of manufacturing and agriculture.

## **5.2 DESCRIPTION OF AFFECTED INDUSTRIES**

New Rules 4550 and 3190 affect a broad set of industries, namely those within the agricultural sector. These industries are: cash grains (SIC 011), field crops (SIC 013), vegetables and melons (SIC 016), fruits and tree nuts (SIC 017), livestock,

except dairy and poultry (SIC 021), dairy farms (SIC 024), and poultry and eggs (SIC 025).

The analysis below is based on data for the year 2002, the most current data available. The data comes from vendors such as the Minnesota IMPLAN Group, the California Employment Development Department, Labor Market Information Division, the US Census 1997 Agricultural Census, and the California Agricultural Statistical Service.

Table 3 identifies economic trends for those sources subject to the new rules, and it provides a comparison between two points in time—1997 and 2002. As Table 3 shows, overall employment decreased annually by 5 percent for the five-year period—from 209,700 to 158,300 jobs. Statewide, agricultural employment also annually decreased by 7 percent.

As Table 3 shows, agricultural industries in the region specifically affected by the new rules also declined. Cash grains (SIC 011), field crops (SIC 013), vegetables and melons (SIC 016), fruits and tree nuts (SIC 017), livestock, except dairy and poultry (SIC 021), dairy farms (SIC 024), and poultry and eggs (SIC 025) declined by 10, 10, 11, 11, 2, 3, and 10 percent respectively (see Table 3) between 1997 and 2002. Across the state, these industries also declined.

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**TABLE 3**  
**Employment Trends: All Agricultural Industries (Including Affected By Rule 4550 and Rule 3190)**  
**1997 - 2002**

SIC	Description	SJV Region			California				
		1997	2002	97 - 02 Change	% Annual Change	1997	2002	97 - 02 Change	% Annual Change
	AGRICULTURE (ALL)	209,733	158,278	-51,456	-5%	501,463	315,685	-185,779	-7%
	Agriculture (crops & livestock)	96,926	67,649	-29,277	-6%	265,333	139,120	-126,213	-10%
	Agricultural production—crops	82,969	55,742	-27,227	-7%	208,930	121,690	-87,240	-8%
011	Cash grains	5,717	3,775	-1,942	-7%	12,581	6,914	-5,667	-9%
013	Field crops, except cash grains	14,467	9,774	-4,694	-6%	22,625	11,969	-10,656	-9%
016	Vegetables	10,806	7,024	-3,782	-7%	41,091	25,300	-15,792	-8%
017	Fruits and tree nuts	48,904	31,973	-16,931	-7%	97,791	54,574	-43,217	-9%
018	Horticultural specialties	3,076	3,197	121	1%	34,841	22,932	-11,909	-7%
	Agricultural production—livestock and animal specialties	13,957	11,907	-2,050	-3%	26,480	17,431	-9,049	-7%
021	Livestock, except dairy and poultry	1,882	1,721	-161	-2%	4,703	2,986	-1,717	-7%
024	Dairy farms	9,767	8,481	-1,286	-3%	14,517	9,870	-4,647	-6%
025	Poultry and eggs	1,871	1,258	-612	-7%	4,550	2,801	-1,749	-8%
027	Animal specialties	288	139	-148	-10%	2,090	1,377	-713	-7%
029	General farms, primarily livestock and animal specialties	149	308	159	21%	620	397	-223	-7%
07	Agricultural services	110,476	86,666	-23,810	-4%	262,409	172,778	-88,631	-7%
0761	Farm labor contractors	71,663	57,018	-14,645	-4%	112,049	70,869	-41,180	-7%
08	Forestry	1,001	1,321	320	6%	2,215	2,082	-636	-6%
09	Fishing, hunting, and trapping	1,330	23	-1,307	-20%	1,429	704	-725	-10%

Sources: Applied Development Economics, based on data from Minnesota IMPLAN Group and California Employment Development Department, LMID.

### 5.3 ECONOMIC CHARACTERISTICS OF INDUSTRIES AFFECTED BY RULE 4550 AND RULE 3190

Table 4 identifies the economic characteristics of all agricultural industries in the San Joaquin Valley region, not just industries affected by the proposed new rules. This table shows that the agricultural sector employs 158,300 workers. The sector has an estimated aggregate payroll of \$2.5 billion, and estimated value of \$15.1 billion.

**TABLE 4**  
**Economic Characteristics of All Agricultural Industries, 2002**

SIC	Description	Employment	Aggregate wages	Harvested acreage	Aggregate Agricultural Value
011	Cash grains	3,775	\$67,431,456	1,367,911	\$614,953,920
013	Field crops, except cash grains	9,774	\$197,175,559	1,458,213	\$1,680,467,250
016	Vegetables	7,024	\$141,415,356	521,622	\$1,927,588,460
017	Fruits and tree nuts	31,973	\$521,721,897	1,636,022	\$5,472,726,602
018	Horticultural specialties	3,197	\$69,543,895		\$454,103,580
021	Livestock, except dairy and poultry	1,721	\$33,762,600		\$1,090,942,076
024	Dairy farms	8,481	\$187,699,014		\$2,851,341,360
025	Poultry and eggs	1,258	\$28,071,105		\$839,366,080
027	Animal specialties	139	\$2,908,497		\$94,569,020
Other		90,936	\$1,286,958,883		\$112,081,228
<i>SUM</i>		158,278	\$2,536,688,263	4,983,767	\$15,138,139,576
<i>SUM (affected industries only)</i>		64,005	\$1,177,276,988	4,983,767	\$14,477,385,748

Sources: applied Development Economics, based on IMPLAN and California Agricultural Statistical Services

Table 4 also summarizes the economic characteristics of industries directly affected by the new rules. These industries employ 64,005 workers, or less than half of all agricultural workers. Of the \$15.1 billion in value, affected industries generate \$14.5 billion in value, or 97 percent.

As Table 5 shows, the affected industries employ 64,005 workers and this amount, as a ratio of total employment in all sectors, represents 13 percent of all employment in the San Joaquin Valley region. Moreover, affected industries employ in aggregate 56 percent of all workers in the state in the same industries such as those affected in the region. For specific industries, the proportion is higher. Eighty-two percent of all

workers in field crops (SIC 013) in the state work on farms in the San Joaquin Valley region, as Table 5 shows.

**TABLE 5**  
**Employment In Impacted Industries Subject To Rules 4550 and 3190**  
**Relative To San Joaquin Valley Region And California, 2002**

<b>SIC</b>	<b>Description</b>	<b>Employment in Affected Industries In Region</b>	<b>Employment in Affected Industries In State</b>	<b>Affected Industries As % of All Employment (N = 12,388,691)</b>	<b>Affected Industries As % of All Employment in Region (N = 903,700)</b>	<b>Affected Industries As % of Calif. Employment In Same Industries</b>
011	Cash grains	3,775	6,914	0.03%	0.8%	55%
013	Field crops, except cash grains	9,774	11,969	0.08%	1.3%	82%
016	Vegetables	7,024	25,300	0.06%	2.8%	28%
017	Fruits and tree nuts	31,973	54,574	0.26%	6.0%	59%
018	Horticultural specialties	3,197	22,932	0.03%	2.5%	14%
021	Livestock, except dairy and poultry	1,721	2,986	0.01%	0.3%	58%
024	Dairy farms	8,481	9,870	0.07%	1.1%	86%
025	Poultry and eggs	1,258	2,801	0.01%	0.3%	45%
027	Animal specialties	139	1,377	0.00%	0.2%	10%
Other		90,936	176,961	0.73%	19.6%	51%
	<i>SUM</i>	158,278	315,685	1.28%	34.9%	50%
	<i>SUM (affected industries only)</i>	64,005	114,415	0.52%	12.7%	56%



## 6. SOCIOECONOMIC IMPACTS

### 6.1 COMPLIANCE COST ESTIMATES

The District cost estimates are based in part on data provided by the affected sources, and in part on District analysis. The District's cost of compliance analysis indicates that, overall, affected industries would experience annual costs that range between \$140,000 and \$31,102,000. Table 6 provides a breakdown of the estimated costs, and these costs are broken down into two cost scenarios.

**TABLE 6**  
**Annual Compliance Cost**

<b>SIC Grouping</b>	<b>Name</b>	<b>Lower Cost Alternative</b>	<b>Upper Cost Alternative</b>
011	Cash grains	-\$11,000	\$3,852,000
013	Field crops	\$26,000	\$7,328,000
016	Vegetables	-\$235,000	\$1,549,000
017	Fruits and tree nuts	-\$157,000	\$8,427,000
	Sub Total	-\$377,000	\$21,156,000
021	Livestock	\$28,000	\$898,000
024	Dairy Farms	\$481,000	\$8,765,000
025	Poultry and Eggs	\$8,000	\$283,000
	Sub Total	\$517,000	\$9,946,000
<b>SUM</b>		<b>\$140,000</b>	<b>\$31,102,000</b>

Source: San Joaquin Valley Unified Air Pollution Control District

### 6.2 BUSINESS RESPONSE TO COMPLIANCE COSTS

Sources and industries impacted by the proposed rules may respond in a variety of ways when faced with new regulatory costs. These responses may range from simply absorbing the costs and accepting a lower rate of return to shutting down the business operation altogether. Sources may also seek to pass the costs on to their customers in the form of higher prices, or they may renew efforts to increase productivity and reduce costs elsewhere in their operation in order to recoup the regulatory costs and maintain profit levels.

These options were discussed with the businesses that participated in the focus group session in January 2004. While

some affected sources said they could attempt to absorb the costs if they are not substantial, the majority of crop growers in attendance voiced concern, pointing out that the agricultural sector in general is what is referred to as a “price taker.” In other words, commodity and livestock prices are established in the global marketplace, and, as such, there is little room for scaling the price upwards to accommodate regulatory costs associated with Rule 4550 and 3190, according to members present at the January 2004 focus group meeting.

### 6.3 IMPACT ANALYSIS

The businesses’ responses to increased compliance costs hinge on the effect of the costs on the profits generated by the affected sources. An impact on estimated profits greater than 10 percent implies that the source would experience serious economic effects because of the compliance cost. When compliance costs are greater than 10 percent of estimated profits, companies typically respond to the impact by laying off some workers, closing parts of manufacturing or agricultural facilities or, in the most drastic case, possibly closing the affected facilities.

Using the cost estimates developed by the District, Applied Development Economics calculated the socioeconomic impacts of new Rule 4550 and Rule 3190. In calculating impacts of the proposed rules on profits, ADE used net income data obtained from the California Department of Food and Agriculture and the US Census 1997 Agricultural Census. Table 7 identifies net income ratios for the agricultural sector.

**TABLE 7**  
**Net Income as a Percent of Agricultural Value**

	<b>1997</b>					
California*	26.6%					
San Joaquin Valley Region*	24.0%					
	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>5-Year Avg</b>
California**	23.6%	21.1%	19.9%	20.3%	13.7%	19.7%

Sources: Applied Development Economics, based on California Department of Food and Agriculture(\*\*), "Resource Directory: 2002", page 34, and US Agricultural Census (\*), 1997, Table 2

Based on the information in Table 7, which was combined with information in Table 4, we estimate the affected industries as having generated a combined profit of \$2.9 billion on \$15.1 billion in value in the year 2002. Table 8 below shows the estimated value generated by affected industries within agriculture, as well as costs of the proposed rules under both cost alternatives. Affected industries will incur an aggregate cost of \$140,000 under the lower cost alternative, while in the upper cost alternative, the aggregate cost is \$31.1 million.

**TABLE 8**  
**Socioeconomic Impacts of Rule 4550 and Rule 3190 on Affected Industries, 2002**

SIC	Description	Employment	Harvested acreage	Value	Returns (19.7%)	Lower cost alternative	Upper cost alternative
011	Cash grains	3,775	1,367,911	\$614,953,920	\$121,145,922	-\$11,000	\$3,852,000
013	Field crops, except cash grains	9,774	1,458,213	\$1,680,467,250	\$331,052,048	\$26,000	\$7,328,000
016	Vegetables	7,024	521,622	\$1,927,588,460	\$379,734,927	-\$235,000	\$1,549,000
017	Fruits and tree nuts	31,973	1,636,022	\$5,472,726,602	\$1,078,127,141	-\$157,000	\$8,427,000
018	Horticultural specialties	3,197		\$454,103,580	\$89,458,405		
021	Livestock, except dairy and poultry	1,721		\$1,090,942,076	\$214,915,589	\$28,000	\$898,000
024	Dairy farms	8,481		\$2,851,341,360	\$561,714,248	\$481,000	\$8,765,000
025	Poultry and eggs	1,258		\$839,366,080	\$165,355,118	\$8,000	\$283,000
027	Animal specialties	139		\$94,569,020	\$18,630,097		
Other		90,936		\$112,081,228	\$22,080,002		
<i>SUM</i>		158,278	4,983,767	\$15,138,139,576	\$2,982,213,496	\$140,000	\$31,102,000

Source: Applied Development Economics, based on data from the State of California, California Agricultural Statistical Service (Agricultural County Commissioners' Data) (<http://www.nass.usda.gov/ca/bul/agcom/indexcac.htm>)

When analyzing the impacts of the new rule on agricultural industries, the data has to be re-arranged to account for the fact that farms that are smaller than 100 acres will not be subject to the CMP. Table 9 distributes farms by specified thresholds. As Table 9 demonstrates, there were 25,808 farms in the year 2002. Of the 25,808 farms, there are 21,084 farms with aggregate harvested acreage of 4,983,768 acres, which is consistent with Table 8. Also consistent with Table 8, Table 9 below shows that the agricultural sector generated \$15,138,139,576 in aggregate value in 2002. Moreover, the return on this value is an estimated \$2,910,249,992.

**TABLE 9**  
**Distribution Of Farms By Specified Thresholds and Other Economic Indicators, 2002**

	Farms, 1997	Farms, 2002	Estimated Acreage, 2002	Estimated Value, 2002	Returns (19.7%), 2002
ALL Agricultural Farm Lands	27,289	25,808	10,397,000	\$15,138,139,576	\$2,982,213,496
Farms with Harvested Acreage	22,384	21,084	4,355,968	\$9,695,736,232	\$1,910,060,038
Less than 100 acres threshold	16,101	15,167	405,284	\$956,041,412	\$188,340,158
Greater than 100 acres threshold	6,283	5,916	3,950,683	\$8,739,694,820	\$1,721,719,880
Animal Feeding Operations	5,286	4,465	6,041,032	\$4,781,649,516	\$941,984,955
Below specified thresholds	4,018	3,459		\$3,188,125,372	\$628,060,698
Above specified thresholds	1,268	1,006		\$1,593,524,144	\$313,924,256
Industries not impacted (horticulture, aquaculture, etc)	2,437	1,047		\$660,753,828	\$130,168,504

Source: Applied Development Economics, based on California Agricultural Statistical Service (County Agricultural Commissioner Data), Agricultural Census 97 (Tables 2, 6 and 7) and Agricultural Census, 2002 (preliminary data tables). Note: The sum of number of farms in "Farms with Harvested Acreage", "Animal Feeding Operations" and "Industries not Impacted" columns do not equal number of farms in "ALL Agricultural Farm Lands" due to the fact that "Farms with Harvested Acreage" includes farms that produce both crops and livestock. Likewise, farms in "Agricultural Feeding Operations" includes livestock-producing farms that also produce crops. However, the Agricultural Census 97 does not provide a table that demonstrates in a discrete fashion the number of farms that produces both crops and livestock. Estimated value data by "Farms with Harvested Acreage" and "Animal Feeding Operations" are only for crop production and livestock production respectively, i.e. no cross-over.

In the following page, Table 10 compares the cost of the new rules, using two cost alternatives. Of the 21,084 farms that grow crops, 5,916 farms are subject to Rule 4550 and Rule 3190. These farms are at least 100 acres, the threshold above which farms are required to implement CMP Plans. Crop-producing farms affected by the CMP rules will bear a cost that ranges between -\$377,700 (in the lower cost alternative) and \$21,156,000 (in the upper cost alternative). In other words, by implementing CMP Plans, farms could save \$377,700, according to the lower cost alternative.

Of the 4,465 farms that produce livestock, 1,006 will be subject to Rule 4550 and Rule 3190. Livestock-producing farms affected by the rules will bear a cost that ranges between \$517,000 and \$9,946,000. In aggregate, the cost of the new rules on affected agricultural industries is estimated to range from .005 percent to 1 percent of aggregate profits. Thus, farms affected by Rule 4550 and Rule 3190 will not experience any significant negative impacts as a result of the rules.

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**TABLE 10**  
**Socioeconomic Impacts of Rule 4550 and Rule 3190 on Affected Industries: Costs As Percent of Profits and Other Impacts, 2002**

	Farms, 2002	Estimated Value, 2002	Returns (19.7%), 2002	Lower Cost Alternative	Upper Cost Alternative	Lower Cost		Upper Cost	
						As Percent of Profit	As Percent Above Threshold	As Percent of Profit	Above Threshold
ALL Agricultural Farm Lands	25,808	\$15,138,139,576	\$2,982,213,496	\$140,000	\$31,102,000	0.005%	1%	no	no
<b>Farms with Harvested Acreage</b>	<b>21,084</b>	<b>\$9,695,736,232</b>	<b>\$1,910,060,038</b>						
Less than 100 acres	15,167	\$956,041,412	\$188,340,158	-- exempt --	-- exempt --				
Greater than 100 acres	5,916	\$8,739,694,820	\$1,721,719,880	-\$377,000	\$21,156,000		1%	no	no
<b>Animal Feeding Operations</b>	<b>4,455</b>	<b>\$4,781,649,516</b>	<b>\$941,984,955</b>						
Below specified thresholds	3,459	\$3,188,125,372	\$628,060,698	-- exempt --	-- exempt --				
Above specified thresholds	1,006	\$1,593,524,144	\$313,924,256	\$517,000	\$9,946,000	0.2%	3%	no	no
<b>Industries not impacted (horticulture, aquaculture, etc)</b>	<b>1,047</b>	<b>\$660,753,828</b>	<b>\$130,168,504</b>						

Source: Applied Development Economics, based on California Agricultural Statistical Service (County Agricultural Commissioner Data), Agricultural Census 97 (Tables 2, 6 and 7) and Agricultural Census, 2002 (preliminary data tables).

## **6.4 IMPACT ON SMALL FARMS**

In addition to analyzing the employment impacts of proposed new rules, state legislation requires that the socioeconomic analysis assess whether small businesses are disproportionately affected by air quality rules. First, this section briefly summarizes the CMP Program as it relates to farms smaller than 100 acres. Second, this section profiles the agricultural industry by farm size categories, and, in so doing, shows that half of the farms in California and the San Joaquin Valley region are below 21 and 27 acres respectively. Then, this section discusses the size of the industries affected by the proposed rule. Finally, this section concludes with a discussion as to whether the affected farms and industries qualify as small businesses as defined by the federal government.

### **CMP PROGRAM AND SPECIFIED THRESHOLDS**

The District proposes what it refers to as a “de minimis” level of 100 acres above which farms would be required to comply with the requirements of Rule 4550. This level ensures that 90% of the harvested acres in the San Joaquin Valley will implement CMPs, according to District staff. The District states that the “de minimis” threshold reduces the administrative burden and program costs while achieving the needed reductions. Thus, farms smaller than 100 acres will not be required to submit for and implement a CMP Plan and, as such, will not directly bear any costs associated with these plans. The discussion directly below shows that farms smaller than 100 acres constitutes 72 percent of all farms in the region, meaning that the bulk of farms are excluded from the CMP requirements. For AFOs, the District also proposes de minimis levels of 500 mature dairy cows, 190 beef cattle or heifers, 82,000 laying hens, 125,000 chickens (except layers), and 55,000 turkeys.

### **FARMS BY SIZE OF FARM CATEGORIES**

Table 12 distributes farms by different farm size categories. The data comes from the US Census’ 1997 Agricultural Census, which also provides data at the county level. On average, farms in the Central Valley are 194 acres, versus the average size of farms across the state, which is 154 acres. The

average size of farms is driven in part by a relatively small number of large farms. Table 11 includes data for farm-lands that produce crops and livestock. As shown in the table, 72 percent of all farms with harvested acreage in the region are less than 100 acres. In the state and region, the median size of farms is 21 and 27 acres respectively.

**TABLE 11**  
**Distribution Of Farms By Size of Farm, 1997**

	California Farms		Region Farms	
SUM	55,590		22,384	
1 to 24 acres	24,299	44%	9,843	44%
25 to 99 acres	15,445	28%	6,218	28%
100 to 249 acres	6,647	12%	3,232	14%
250 to 499 acres	3,325	6%	1,000	4%
500 acres or more	5,874	11%	2,090	9%
<i>Average</i>	<i>154</i>		<i>194</i>	
<i>Median</i>	<i>21</i>		<i>27</i>	

Source: Applied Development Economics, based on 1997 Agricultural Census, Table 7

### **DEFINITION OF A SMALL FARM**

The previous section showed that farms in the San Joaquin Valley region in general are for the most part less than 100 acres. More specifically, half of all farms with harvested acreage in the region are less than 27 acres, a size that is considerably less than the average farm size for the region, or 194 acres. But what precisely is a small farm? This section discusses how the federal government defines small farms in order to qualify farms for different agricultural programs and subsidies.

According to the United States Department of Agriculture (USDA), a small farm is any farm that earns less than \$250,000 in sales.<sup>2</sup> Until the late 1990s, the threshold was \$100,000: farms selling less than this amount were, by definition, small

<sup>2</sup>Dan Looker and Cheryl Tevis, "Not so small or insignificant. (National Commission on Small Farms report)," *Successful Farming*, March 15, 1998 ([http://www.findarticles.com/cf\\_dls/m1204/n5\\_v96/20510331/p5/article.jhtml?term=](http://www.findarticles.com/cf_dls/m1204/n5_v96/20510331/p5/article.jhtml?term=) )



farms.<sup>3</sup> Although not a part of how the federal government currently defines small farms, the Food and Agricultural Act of 1977 employed a more stringent definition of small farms for the purposes of qualifying farms for particular programs related to that legislation, calling small farms any farms that earn less than \$20,000 in sales.<sup>4</sup>

Table 12 shows that 15,167 (or 72 percent) of the 21,084 crop-producing farms are exempt from Rule 4550 and Rule 3190 by virtue of the fact that they are less than 100 acres. In addition, these farms earn, on average, \$63,000 in sales. In other words, 15,167 farms exempted from the rules are also small farms according to the definition employed by the USDA, as these farms earned, on average, less than \$250,000 in sales. Moreover, the 5,916 crop-producing farms subject to the rules earned, on average, \$1.5 million in sales in 2002. Thus, new Rule 4550 and Rule 3190 do not disproportionately affect small crop-growing farms as defined by the USDA.

Of the 4,465 livestock-producing farms, 3,459 (or 77 percent) are exempt from the rules by virtue of thresholds established by the District. In other words, the bulk of farms that produce livestock are exempt from the rules. To be sure, there are 1,006 livestock-producing farms that are subject to Rule 4550 and Rule 3190; on average, these farms earned \$1.5 million in sales in 2002. In other words, AFOs that are subject to the rules are not small farms, as defined by the USDA. Thus, new Rule 4550 and Rule 3190 do not disproportionately affect small livestock-producing farms.

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<sup>3</sup>University of California Cooperative Extension, "Family Farms in Fresno California" Miolinar and Yang, December, 2000 (<http://ucce.ucdavis.edu/files/filelibrary/742/4900.pdf>)

<sup>4</sup> Cheryl J. Steel, "Why US Agriculture and Rural Areas Have A Stake in Small Farms" (Rural Development perspective, vol. 12 number 2, 1997) (<http://www.ers.usda.gov/publications/rdp/rdp0297/rdp0297e.pdf>)

**TABLE 12**  
**Distribution Of Farms By Specified Thresholds and Other Economic Indicators,**  
**Including Average Value Per Farm, 2002**

	<b>Farms, 2002</b>	<b>Estimated Value, 2002</b>	<b>Estimated Average Value Per Farm</b>
ALL Agricultural Farm Lands	25,808	\$15,138,139,576	\$586,574
<b>Farms with Harvested Acreage</b>	<b>21,084</b>	<b>\$9,695,736,232</b>	<b>\$459,868</b>
Less than 100 acres	15,167	\$956,041,412	\$63,032
Greater than 100 acres	5,916	\$8,739,694,820	\$1,477,230
<b>Animal Feeding Operations</b>	<b>4,465</b>	<b>\$4,781,649,516</b>	<b>\$1,070,991</b>
Below specified thresholds	3,459	\$3,188,125,372	\$921,705
Above specified thresholds	1,006	\$1,593,524,144	\$1,584,411
<b>Industries not Impacted (horticulture, aquaculture, etc)</b>	<b>1,047</b>	<b>\$660,753,828</b>	<b>\$631,267</b>

Source: Applied Development Economics, based on California Agricultural Statistical Service (County Agricultural Commissioner Data), Agricultural Census 97 (Table 13) and Agricultural Census, 2002 (preliminary data tables)