Staff Report

Use Information and Ambient Air Monitoring Recommendations for Fumigations with the Pesticide Active Ingredients 1,3-Dichloropropene and Methyl Bromide

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By

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To fulfill the requirements of AB 1807, the Department of Pesticide Regulation (DPR) has requested the Air Resources Board (ARB) conduct of air monitoring for fumigants 1,3-dichloropropene (1,3-D) and methyl bromide in a high use area. The physical-chemical properties and historical use information of the two fumigants have been provided in the previous monitoring recommendations (DPR, 2001). This document provides the two pesticides use information in Ventura County during 2002 and 2003 to assist the ARB in their selection of appropriate locations and time to conduct the monitoring operations in 2005.

A. Pesticide Use Summary

Ventura was the top use county for methyl bromide and the thirteenth highest use for 1,3-D during years of 2002-2003 (Table 1). Total amount of 1,3-D used was 49,000 pounds in 2002 and 190,000 pounds in 2003; and methyl bromide annual use was approximately 1,500,000 pounds. Based on discussions with the registrant, use of 1,3-D is expected to increase in Ventura. In Ventura, majority of 1,3-D was used from March to September with two peaks in March and September. High use of methyl bromide occurred from June to September with a peak in August (Table 2). 1,3-D and methyl bromide were primarily used to control nematodes on strawberries, raspberry, peppers, citrus, nursery plants, and preplanting soil applications (Table 3).

B. Ambient Air Monitoring Recommendations

The trends of 1,3-D and methyl bromide use in 2002-2003 suggest that ambient air monitoring should occur over an 8-week period during August and September 2005 in Ventura County. The monitoring should be simultaneous for both 1,3-D and methyl bromide. Due to their high use and potential to reach the regulatory use limits, DPR recommends monitoring in townships 1N/21W and 2N/22W (Table 4). Distribution by township and section of 1,3-D and methyl bromide use in August and September 2002 and 2003 were mapped on Figures 1-4.

Six sampling sites (five air monitoring sites and one urban background site) should be selected in relatively high-population areas or in areas frequented by people (e.g., schools or school district offices, fire stations, or other public buildings). The ambient air monitoring sites should be located in high use of 1,3-D and methyl bromide areas. The background samples should be collected in an area distant to applications of the two target fumigants. At each sampling site, four 24-hour samples should be collected per week during the sampling period. DPR recommends close coordination with the county agricultural commissioner to select the best sampling sites and monitoring period.

In addition to the primary samples, replicate (co-located) samples are needed for 4 dates at each sampling location. Field spike samples should be collected at the same environmental conditions (e.g., temperature, humidity, exposure to sunlight) and monitoring study conditions (e.g., air flow rates, sample transportation and storage) as those occurring at the time of ambient air sampling. Target 24-hour quantitation limits of 0.01 $\mu g/m^3$ or lower for 1,3-Dand 0.4 $\mu g/m^3$ or lower for methyl bromide are recommended. Additionally, we request that you provide in the ambient monitoring report: 1) the proximity of the sampler to treated or potentially treated fields,

including the distance and direction, 2) the distance the sampler is located above the ground, and 3) a map of the monitoring site locations.

C. SAFETY RECOMMENDATIONS

This recommendation should not require any special safety equipment or precautions for sampling personnel.

D. REFERENCES

DPR. 2002-2003. Annual Pesticide Use Reports. California Department of Pesticide Regulation, Sacramento, California.

DPR. 2001. Use Information and Air Monitoring Recommendations for Field and Structural Fumigations with the Pesticide Active Ingredients 1,3-Dichloropropene, Chloropicrin, Metam Sodium, Methyl Bromide, and Sulfuryl Fluoride. http://www.cdpr.ca.gov/docs/empm/pubs/tac/requests.htm

DPR. 2000. Pesticide Label Database. California Department of Pesticide Regulation, Sacramento, California.

Table 1. Use of 1,3-Dichloropropene and Methyl Bromide in Top 30 Counties (Pounds of Active Ingredient)

	1,3-D				Methyl Bromide		
County	**2002**	**2003**	**02-03**	**County**	**2002**	**2003**	**02-03**
KERN	827290	924850	1752140	VENTURA	1430386	561145	2991531
FRESNO	784468	859857	1644325	MONTEREY	1439257	1501735	2940992
MERCED	740007	753796	1493803	SANTA CRUZ	541652	590687	1132339
IMPERIAL	459081	710854	1169935	KERN	218502	664817	883320
STANISLAUS	443280	628077	1071357	SANTA BARBARA	407178	321390	728569
MONTEREY	383470	600038	983508	SISKIYOU	274753	289874	564627
TULARE	309316	322211	631527	SAN DIEGO	231406	238642	470048
SANTA BARBARA	184837	354920	539757	LOS ANGELES	223261	244944	468205
MADERA	92589	336957	429546	SAN JOAQUIN	253886	175015	428901
SAN JOAQUIN	116339	203100	319439	FRESNO	174155	230820	404975
SONOMA	118726	127656	246383	ORANGE	208178	172214	380392
DEL NORTE	121793	121198	242991	RIVERSIDE	115082	246866	361948
VENTURA	49024	187792	236816	MERCED	149673	209711	359384
SAN LUIS OBISPO	89179	121134	210313	TULARE	144821	149560	294380
SANTA CRUZ	81582	117808	199391	STANISLAUS	72983	148087	221071
SUTTER	89064	104571	193635	SHASTA	61381	100845	162226
KINGS	77301	107467	184768	SUTTER	76321	79556	155877
RIVERSIDE	68286	83406	151692	TEHAMA	83762	39026	122789
BUTTE	74200	33713	107913	SAN LUIS OBISPO	77533	42378	119911
NAPA	79137	7974	87111	LASSEN	74844	13346	88190
LOS ANGELES	19927	60194	80121	GLENN	37256	41235	78490
SAN BENITO	46499	29134	75633	YOLO	30603	40976	71579
PLACER	23035	32871	55906	IMPERIAL	42681	27501	70182
TEHAMA	21925	18757	40682	SONOMA	60175	8777	68952
SAN DIEGO		39791	39791	MADERA	4414	44116	48529
SANTA CLARA	16281	21235	37516	KINGS	8713	33405	42119
ORANGE	16859	14240	31099	SAN BENITO	28470	13253	41723
YUBA	1772	26647	28419	SANTA CLARA	4028	30337	34365
YOLO	2116	19826	21942	BUTTE	4298	28759	33057
MENDOCINO	6286	14200	20486	YUBA	6423	17174	23597
Statewide Total	**5359193**	**7009034**	**12368227**		**6550818**	**3843988**	**3935216**

Table 2. Monthly Use of 1,3-Dichloropropene and Methyl Bromide in Ventura County (Pounds of Active Ingredient)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1,3-Dichloropropene													
2002		361	19071	9669	6429	380		5812	5190	1	2275		49188
2003	4777	4491	12732	12247	13733	10096	5956	3581	114813	5366			187792
Total	**4777**	**4852**	**31803**	**21916**	**20162**	**10476**	**5956**	**9393**	**120003**	**5367**	**2275**	**0**	**236980**
Methyl Bromide													
2002	3913	4700	4878	15076	85549	196752	164836	776518	145961	5179	9444	21155	1433961
2003	3450	9500	51536	48607	100964	323084	178788	767490	54263	14744	3597	5121	1561145
Total	**7363**	**14200**	**56414**	**63683**	**186513**	**519836**	**343624**	**1544008**	**200224**	**19923**	**13041**	**26276**	**2995106**

Table 3. Monthly Use of 1,3-Dichloropropene and Methyl Bromide by the Top Ten Crops in Ventura County (2002-2003) (Pounds of Active Ingredient)

COMMODITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1,3-Dichloropropene													
STRAWBERRY						8507	5954	9318	114388				138168
PEPPERS	2079	2067	16479	15534	19769	69							55997
LEMON			2816	2478	18	311			5451	5366	2275		18716
ORANGE			5407	273									5681
PEPPERS (CHILI)		154	3859	1555									5568
VEGETABLES			3021										3021
TOMATO		2631	83										2714
ONION	2699												2699
RASPBERRY			138	1939									2077
AVOCADO						1588							1588
TOTAL (Top Ten Crops)	**4777**	**4852**	**31803**	**21779**	**19787**	**10475**	**5954**	**9318**	**119839**	**5366**	**2275**	**0**	**236227**
Methyl Bromide													
STRAWBERRY	24	24	24	1097	146212	449213	317177	1477660	177950	2256	380	1937	2573954
RASPBERRY		2508	7553	40662	15910	17111	7741	1254	4054	10541	3806	596	111735
N-OUTDOOR PLANTS	2819	1755	3798	1762	6063	7830	12564	19257	8932	4539	5119	6604	81043
PREPLANT-OUTDOOR		276	497			9286	2978	41096	7466		2157	258	64015
TOMATO			4500		5226	35544		3618					48888
ORNAMENTAL TURF	62	8353	8044	6961	7663							15881	46964
PEPPERS			31200				838						32038
LEMON			41	12936	2116	4							15098
FLAVORING CROPS	862	1000	735		3296	843	1176	902	517	2107	862	1000	13300
N-GREENHOUSE PLANTS	645			147			838		1089				2718
TOTAL (Top Ten Crops)	**4412**	**13916**	**56392**	**63565**	**186486**	**519830**	**343311**	**1543787**	**200007**	**19443**	**12324**	**26276**	**2989751**

Table 4. 1,3-Dichloropropene and Methyl Bromide Use by the Township in Ventura County (August and September 2002-2003) (Pounds of Active Ingredient)

TOWNSHIP	1,3-D			METHYL BROMIDE			1,3-D & METHYL BROMIDE
	AUGUST	SEPTEMBER	AUG-SEP	AUGUST	SEPTEMBER	AUG-SEP	AUG-SEP
??? ??					737	737	737
S01N 20W	2966		2966	106217		106217	109184
S01N 21W	6351	27656	34007	442295	71142	513437	547445
S01N 22W		22518	22518	187835	39110	226945	249462
S02N 19W				424	461	884	884
S02N 20W		12436	12436	19169	10158	29327	41763
S02N 21W	75	16248	16323	280307	36561	316868	333191
S02N 22W		35694	35694	439889	40062	479950	515644
S02N 23W				22479		22479	22479
S03N 19W		5451	5451				5451
S03N 21W				30194	1973	32167	32167
S03N 22W					20	20	20
S03N 23W				737		737	737
S04N 18W				13518		13518	13518
S04N 19W				945		945	945
Total	**9393**	**120003**	**129396**	**1544008**	**200223**	**1744231**	**1873627**

Figure 1. Venura County 1,3_Dichloropropene Use
August and September 2002

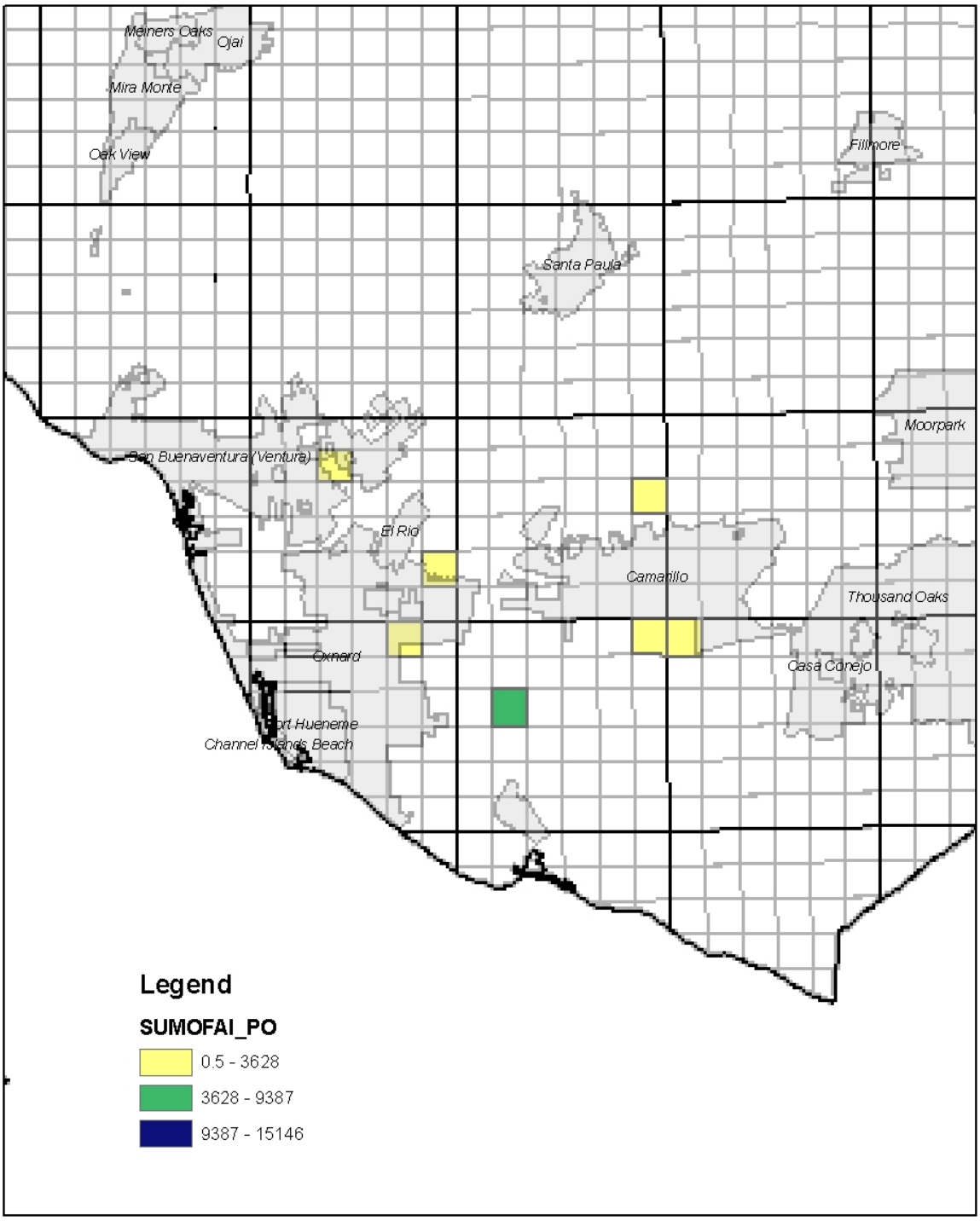

Figure 2. Venura County 1,3_Dichloropropene Use
August and September 2003

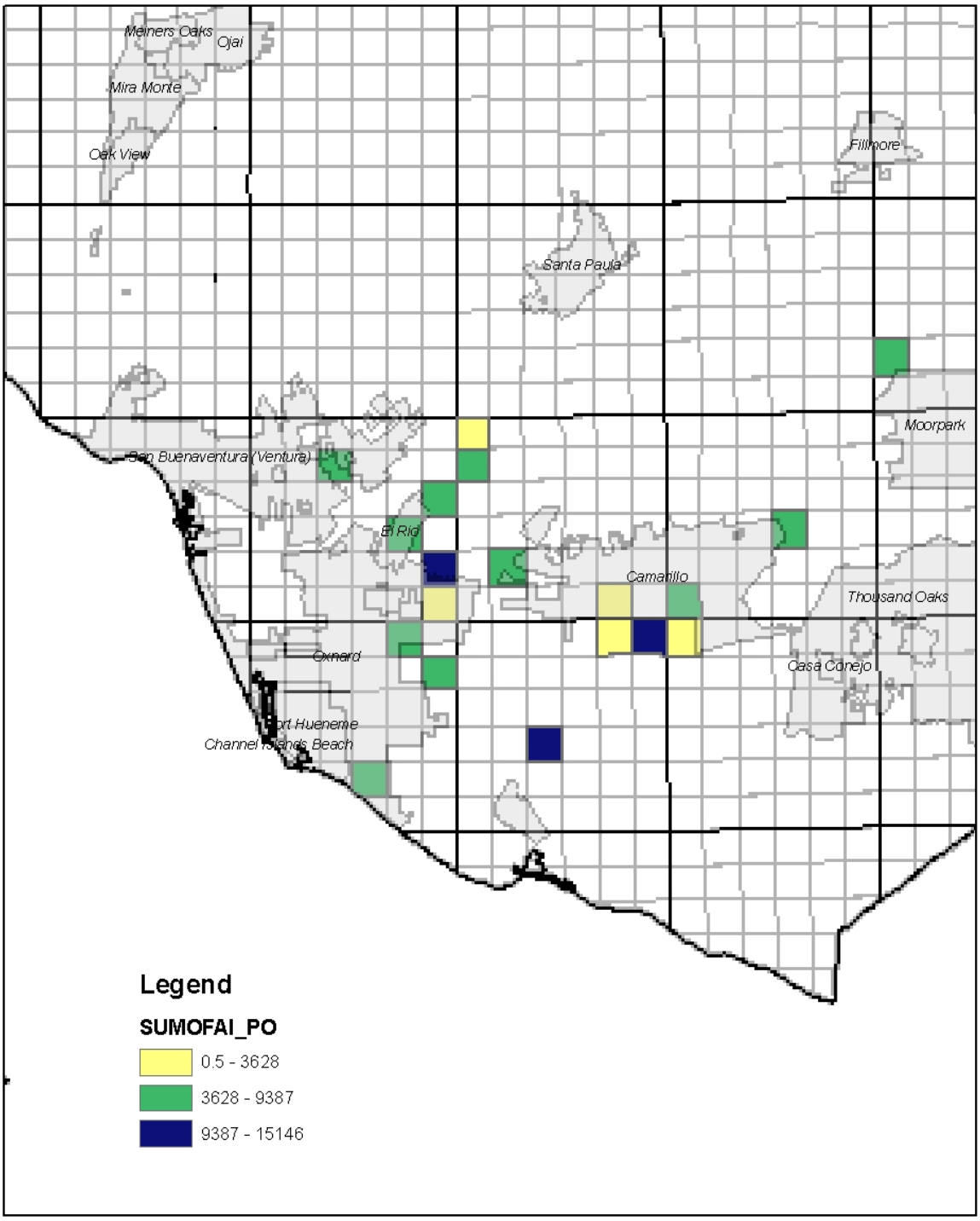

Figure 3. Venura County Methyl Bromide Use
August and September 2002

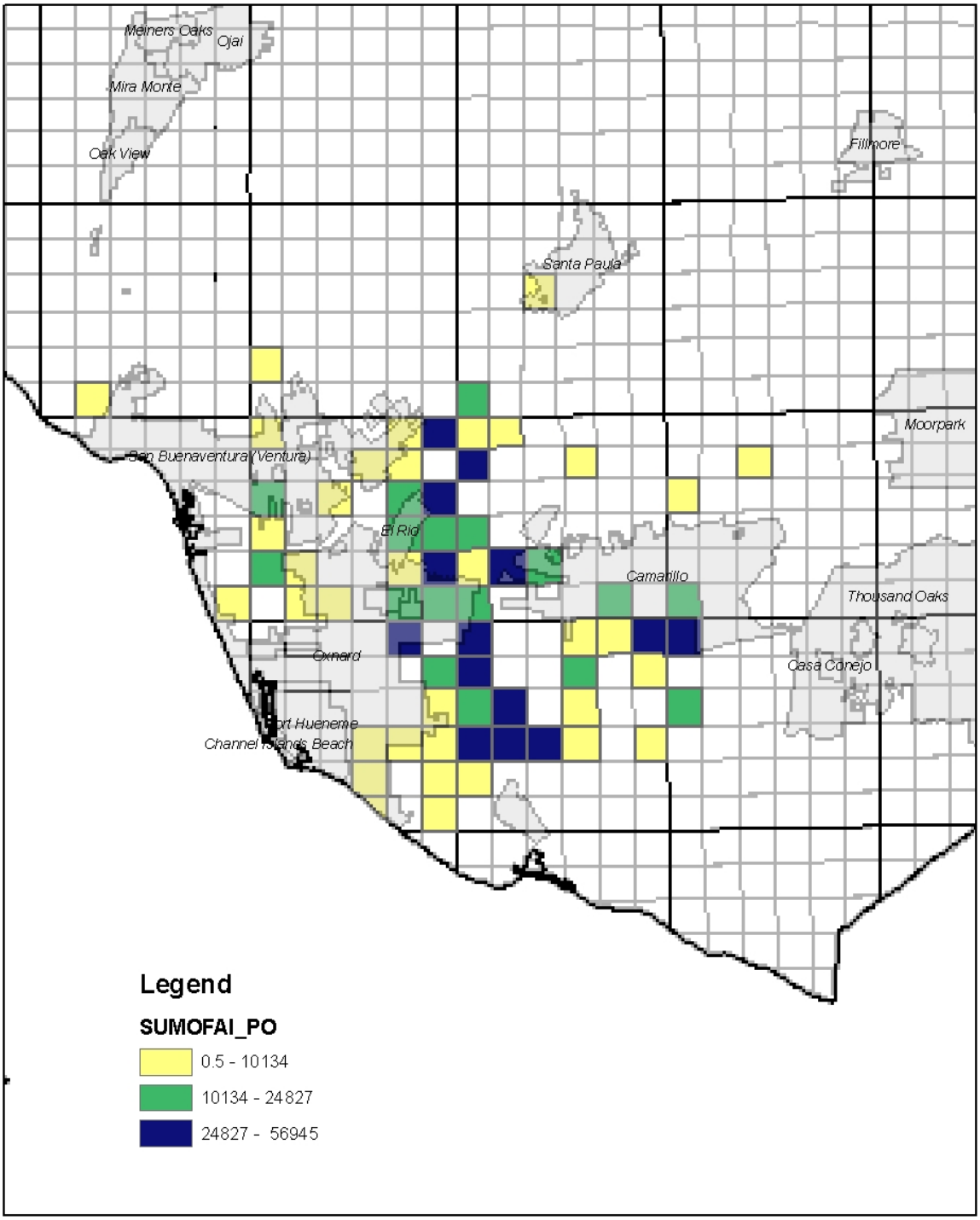
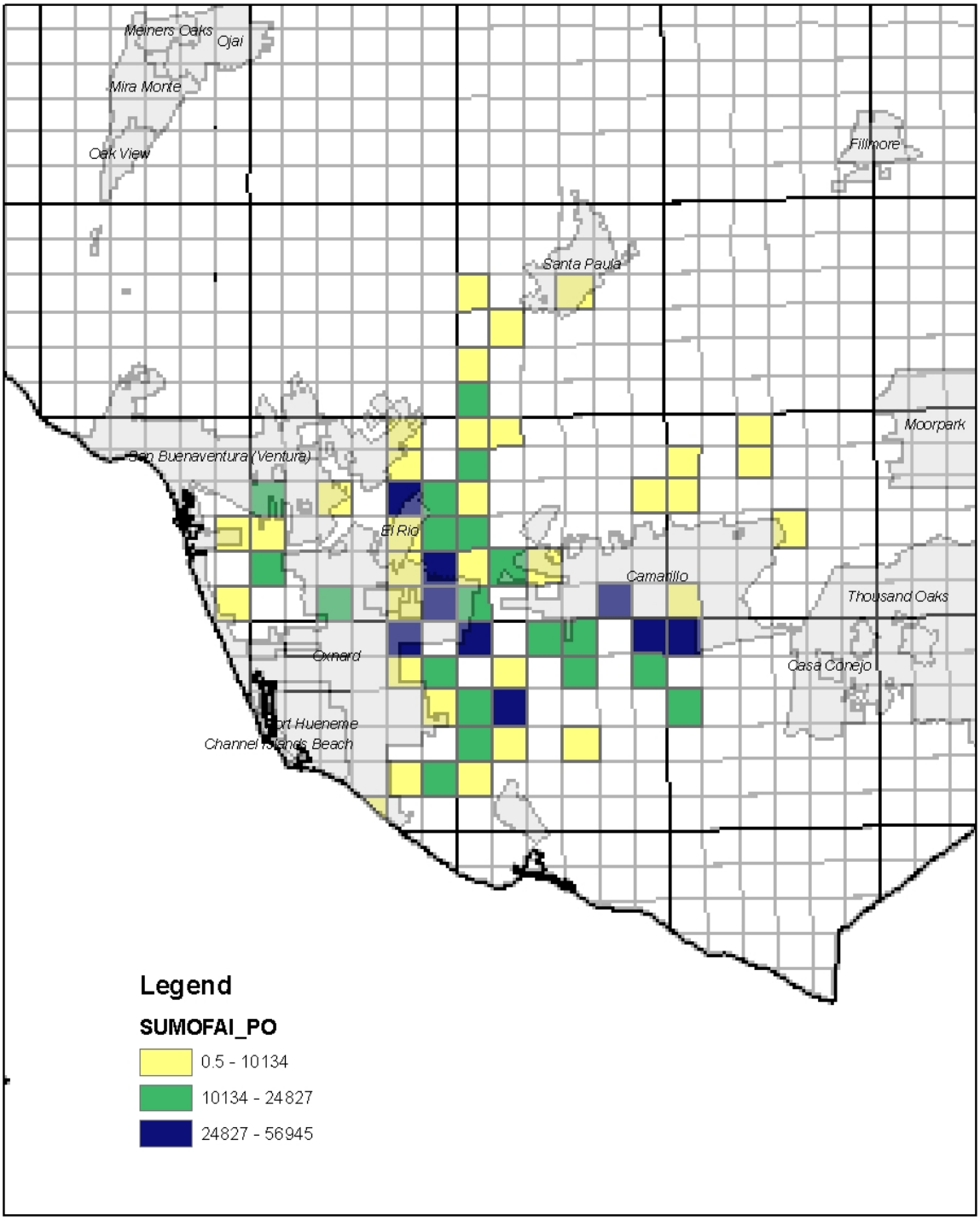
Figure 4. Venura County Methyl Bromide Use
August and September 2003