FINAL
SACRAMENTO VALLEY AIR BASIN
2013 SMOKE MANAGEMENT PROGRAM

Prepared by

The Sacramento Valley Basinwide Air Pollution Control Council
and the Technical Advisory Committee

Sacramento Valley Basinwide Air Pollution Control Council Adopted: August 2, 2013

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1. BACKGROUND

The **"Sacramento Valley Smoke Management Program**" plan is prepared by the Sacramento Valley Basinwide Air Pollution Control Council (BCC) and its Technical Advisory Committee (TAC). The BCC and TAC are comprised of the elected district board member and air pollution control officer (APCO), respectively, from each air district in the Basin: Butte, Colusa, Glenn, Placer, Sacramento, Shasta, Tehama, Yolo/Solano, and Feather River. The BCC reviews and amends the Program plan in cooperation with the staff of the California Air Resources Board (CARB or ARB) Meteorology Section, affected industry, environmental groups and other interested parties.

The purpose of the Program plan is to describe the policies and procedures used with hourly and daily measurements of air quality and meteorology to determine how much open biomass burning can be allowed in the Sacramento Valley Air Basin.

The area covered by the Smoke Management Program plan is referred to as the Sacramento Valley Air Basin (SVAB), and includes all or parts of the following counties: Butte, Colusa, Glenn, Placer (portion), Sacramento, Shasta, Solano (portion), Sutter, Tehama, Yolo and Yuba (Map 1). The dimensions of the Basin are approximately 216 miles from north to south and 95 miles east to west at the widest part. The SVAB is bounded on the north and west by the Coastal Mountain Range and on the east by the southern portion of the Cascade Mountain Range and the northern portion of the Sierra Nevada Mountains. Within the SVAB the elevations reach heights of approximately 3,500 feet in the southwest, 8,500 feet in the northwest, 1,700 feet in the southeast and 10,500 feet in the northeast. The mountain ranges provide a significant physical barrier to trap locally created pollution as well as pollution transported into the Valley from elsewhere. Another prominent landmark within the Sacramento Valley is the Sutter Buttes which have a top elevation of 2,117 feet and are situated in the central part of the Valley floor. However, in contrast, the elevation in Sacramento County near the San Francisco Bay delta is barely above sea level. The topographic map (Map 2) shows elevations within the Basin.

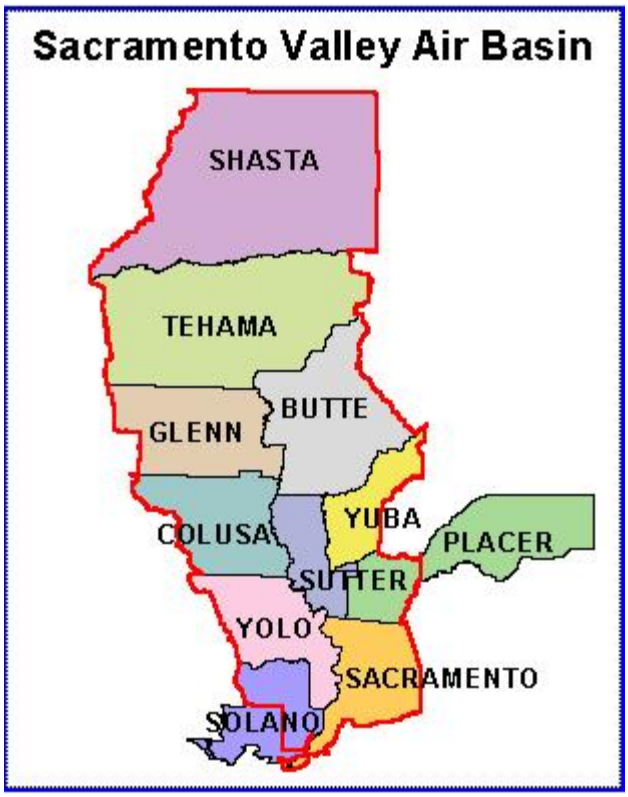
Due to the large geographic area of the Basin the weather varies from north to south and east to west. The meteorological parameters of wind direction and speed, high and low temperatures, and precipitation are measured at several locations around the Basin. These factors have a major effect on air quality and the daily management of biomass burning. Data presented below describe annual climatological conditions (Table 1).

TABLE 1
ELEVATIONS AND CLIMATOLOGY OF THE SACRAMENTO VALLEY AIR BASIN

COUNTY NAME	CITIES	ELEVATION OF CITY - Ft	WINDS 1st 2nd AVERAGE	TEMPERATURE AVERAGE - °F	RAINFALL AVERAGE - In
BUTTE	CHICO	240	SE-9 NW-5	74.69 47.20	25.24
COLUSA	COLUSA	50	ESE-5 NNW-9	75.05 47.15	15.96
GLENN	WILLOWS	140	NW-10 SE-10	74.74 47.52	17.57
PLACER [1]	AUBURN	1,520	SE-10 NW-10	75.10 47.31	35.22
SACRAMENTO	SACRAMENTO	20	SE-10 NW-10	73.58 48.07	17.52
SHASTA	REDDING	600		76.56 50.03	40.16
SOLANO [2]	VACAVILLE	110		74.86 46.32	24.35
SUTTER	YUBA CITY	60	SE-9 NW-10	75.38 49.41	21.01
TEHAMA	RED BLUFF	350		75.51 50.46	22.55
YOLO	WOODLAND	100	NNW-13 SE-5	75.10 47.31	19.53
YUBA	MARYSVILLE	60	SE-11 WNW-9	75.38 49.41	21.01
	SUTTER BUTTES	2,117	SSE-13 N-16		

1) Only the Valley portion of Placer County to and including Auburn are part of the Sacramento Valley Air Basin
2) Only the northern and eastern portions of Solano County are part of the Sacramento Valley Air Basin

MAP 1



MAP 2

Climatological data in Table 1 are annual averages over a four or five year period depending on the specific parameter.

Wind maxima data were measured at the following sites: Butte (Chico State), Colusa (Arbuckle), Glenn (Artois), Placer (Lincoln), Sacramento (Natomas), Sutter (Kirkville), Yolo (Esparto) and Yuba (North Yuba). The primary wind is the direction observed with the greatest frequency, which is the direction with the highest overall percentage of occurrence. The secondary direction is usually but not always the direction with the second highest percentage of occurrence. The main deviation in winds from the typical north-south direction, are on the west side of the Valley where primarily north winds are seen.

Temperature differences between the cities of Redding, Red Bluff, and Vacaville and the other cities in the Valley are evident. At Redding and Red Bluff the average low temperatures are a little warmer possibly due to more cloud cover at the north end of the Valley. The lower average minimum temperature at Vacaville is probably due to the marine influence during the summer months.

The northern and eastern parts of the Basin have higher precipitation totals due to the higher latitude and the orographic lifting of the Sierra Nevada mountain range producing more rainfall. On the west side of the Valley rainfall is generally less due to the rainshadow effect on the lee side of the Coastal Range.

Shown below is a monthly table of 30year averages for the Chico State University farm (Table 2). Normal variations in temperature and rainfall by season (e.g. summer to winter) are shown in the table. The same general weather pattern

would be applicable to all counties in the Sacramento Valley.

TABLE 2 CLIMATOLOGICAL DATA FOR CHICO STATE FARM		
MONTH	TEMPERATURES - ^{O}F	RAINFALL - INCHES
JANUARY	54 - 36	5.09
FEBRUARY	60 -39	3.83
MARCH	65 - 41	3.81
APRIL	72 - 44	1.63
MAY	81 - 51	0.53
JUNE	90 - 57	0.32
JULY	95 - 60	0.03
AUGUST	94 - 59	0.20
SEPTEMBER	88 - 55	0.51
OCTOBER	78 - 48	1.60
NOVEMBER	63 - 41	3.95
DECEMBER	54 - 35	3.74

Although much of the land area of the SVAB is above 1000 feet mean sea level, the vast majority of the populace reside below that elevation. The region is perceived as an excellent place to live and work and is growing rapidly. With the burgeoning population comes greater pollution created by human activities. The Valley is often subject to temperature inversions that, coupled with topographic barriers and hot summer temperatures, create a high potential for air pollution problems. The following table provides recent demographic data by county and city for the Basin (Table 3).

TABLE 3 ***2010 DEMOGRAPHICS OF THE SACRAMENTO VALLEY AIR BASIN[1]***			
COUNTY	**POPULATION**	**CITY**	**POPULATION**
BUTTE	230,116	CHICO OROVILLE	88,228 14,687
COLUSA	23,787	COLUSA	5,947
GLENN	30,880	WILLOWS	6,505
PLACER [1]	171,867	ROSEVILLE LINCOLN	118,788 42,819
SACRAMENTO	1,418,788	SACRAMENTO ELK GROVE	466,488 143,885
SHASTA	191,722	REDDING ANDERSON	91,561 10,826
SOLANO [2]	114,910	VACAVILLE DIXON	97,305 17,605
SUTTER	94,737	YUBA CITY	64,925
TEHAMA	65,593	RED BLUFF	13,825
YOLO	200,849	DAVIS WOODLAND	65,622 55,468
YUBA	72,155	MARYSVILLE	12,867
BASIN TOTAL	2,615,404		

1) Source California Department of Finance and 2010 US Census

1) Only the Valley portion of Placer County to and including Auburn are part of the Sacramento Valley Air Basin
2) Only the northern and eastern portions of Solano County are part of the Sacramento Valley Air Basin

The Sacramento Valley Air Basin developed the first regional, coordinated burning management program in California in 1981. The program was tested for a two-year period before being adopted into regulation in 1983. The program included goals, policies and procedures organized into an agricultural burning management plan. The program has been reviewed every year by SVAB district staff, Air Resources Board (ARB) meteorology and compliance staff, and Basin consultants. Workshops and public hearings held by the Basin Technical Advisory Committee and the Basinwide Control Council have resulted in other changes suggested by the public and the agricultural industry. Many amendments to the program and plan have been made in the last twenty years. The types of changes have encompassed modifications to the ARB equations to expanded descriptions of all program elements.

During the fall burn season data are reviewed daily including air quality levels, meteorological conditions, and the amount of agricultural burning conducted by burning management zone and type of crop residue. Fall data are archived annually to assist in the evaluation of the program results and support proposed changes. The program has achieved its goals of improving air quality and allowing necessary agricultural burning.

The following table contains data on fall agricultural burning over several years (Table 4).

TABLE 4
FALL AGRICULTURAL BURNING (September through December)

	2007	2008	2009	2010
Butte	11,765	10,433	7,220	4,801
Colusa	17,501	11,762	12,289	6,938
Glenn	13,653	10,905	10,507	7,354
Placer	611	739	1,515	784
Sacramento	2,140	1,008	2,354	1,480
Shasta	1,619	1,190	2,408	1,042
Sutter	8,270	8,450	9,171	5,092
Tehama	2,743	2,004	1,934	2,267
Yolo	4,639	3,111	3,407	4,092
Yuba	2,525	2,560	2,625	2,725
BASIN TOTALS	65,466	52,162	53,430	36,575

Recent policy changes at federal and state agencies (Maps 3 and 4) regarding the need for more forest and wildland burning to improve land management have increased the amount of “prescribed burning” on public and private lands. This shift towards more prescribed burning has demanded a review of burning management programs to address the unique issues presented by this type of burning. The national forests have plans for significant increases in burning. The US Forest Service does have access to remote automatic weather stations (Map 5) and the assistance of weather forecasters to help in planning and safely conducting burning.

During the fall burn period (September 1st through November 30th), all proposed prescribed burning shall be reported by districts to the Smoke Management Program Coordinator (SMPC) at least one day prior to ignition. The information to be reported to the SMPC is indicated on the Prescribed Burning Information Form and can be transmitted using the Prescribed Fire Information Reporting System (PFIRS).

MAP 3

The Sacramento Valley is surrounded by national forests

Mendocino

Shasta –Trinity

Lassen

Plumas

Tahoe

MAP 4

Department of Forestry and Fire Protection Administrative Units

SHU - Shasta Trinity Unit

TGU - Tehama Glenn Unit

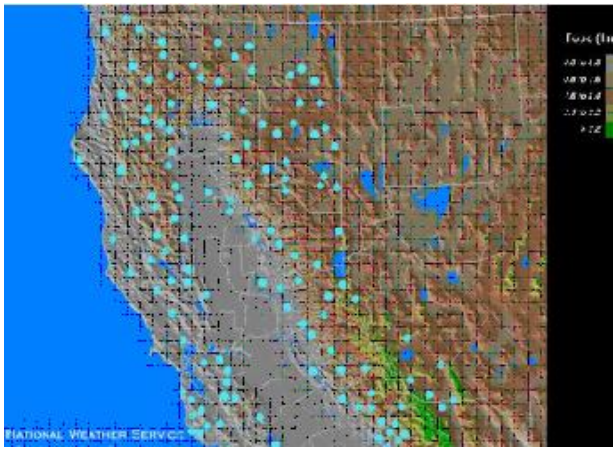
BTU - Butte Unit

LNU - Lake Napa Unit

NEU - Nevada Yuba Placer Unit

AEU - Amador El Dorado Unit

MAP 5



Northern California Interactive RAWS Map

Each dot represents the location of an automatic weather station.

Agricultural burning has been managed effectively in the SVAB for many years. Through the early involvement of the rice industry, frequent communication with air district staff and numerous meetings the growers have become very knowledgeable about the burning management program. The local air districts have computerized databases of growers' fields that are to be burned. Information included in the databases is the location of fields, amount of acres and type of crop residue. Management of the burning on a daily basis involves the temporal and spatial distribution of the fires and a limitation on the amount of acres burned commensurate with air quality and meteorological conditions.

See the example below of records from a burn database of agricultural fields for a single grower.

Field Information

	FIELD #	LOCATION	ZONE	ACRES	BURN?	STAT
R	B5	BAGLEY RD	4	37	No!	E
R	B6	BAGLEY RD	4	74	No!	E
R	E1	DANLEY RD/MAX.SITES	4	22	Burn	E
R	E2	DANLEY RD/MAX.SITES	4	21	Burn	E
R	E3	DANLEY RD/MAX.SITES	4	20	Burn	E
R	E6	MCDERMOTT RD.	4	24	No!	E
R	E6*	MCDERMOTT RD.	4	95	Burn	E
R	E6**	MCDERMOTT RD.	4	50	Burn	E
R	E6***	MCDERMOTT RD.	4	50	Burn	E
R	E7A	MCDERMOTT RD.	4	44	No!	E
R	E7B	MCDERMOTT RD.	4	41	No!	E
R	H63	DANLEY AND TEHAMA-COLUSA CANAL	4	57	No!	E
R	H65	DANLEY AND TEHAMA-COLUSA CANAL	4	45	No!	E
R	H68	DANLEY AND TEHAMA-COLUSA CANAL	4	30	No!	E

The next page is an aerial photograph of farmlands adjacent to and east of the Dunnigan Hills in Yolo County. The photo is a patchwork of rectangular fields with definitive boundaries. Locations of fields are easy to discern by the landmarks indicated on the photo. The SVAB districts have years of experience managing agricultural burning on the Valley floor with precise field locations and acreage and abundant data on baseline air quality and meteorological parameters. The situation with prescribed burning is different.

The bottom half of that page is another aerial photograph of Yolo County to the west of the Dunnigan Hills that shows mountainous terrain where prescribed burning takes place. The canyons and ridges of the mountains cause wind flow patterns to be very complex. Confining burning to a fixed number of acres in such terrain is more difficult. Also, prescribed burning in such areas involves heterogeneous fuels such as grasses, shrubs, and trees that burn at different rates and may even smolder overnight. Drainage winds in early morning hours can carry smoke from higher elevations down into the Valley.

In 1999 there were six consecutive no-burn days from October 17th through October 22nd. Wildfires had been burning around the perimeter of the Basin for several days and the weather conditions with north winds and strong atmospheric stability resulted in very poor air quality. Some of the fires were:

PENDOLA, Tahoe National Forest. This fire was near Bullards Bar Reservoir west of Camptonville and burning in mixed conifer and manzanita.
SIXTEEN, Sonoma-Lake-Napa Ranger Unit. This fire was on the west side of Rumsey Canyon.
BIG BAR COMPLEX, Shasta-Trinity National Forest. The complex was 28 miles northwest of Weaverville. The complex consisted of the Megram and Onion fires.

The particulate air quality data pattern during this period, from all types of particulate monitors, showed higher concentrations on the east side of the Valley. This was probably due to the proximity of the PENDOLA fire. Although these were uncontrolled wildfires, prescribed burning with high fuel loading factors have the potential to adversely impact air quality.

Good management of all biomass burning is the ultimate goal of the Sacramento Valley Air Basin Smoke Management Program.

Dunnigan, Interstate Highway 5 and agricultural fields in the Sacramento Valley.

Coast Range Mountains west of Dunnigan with tree and brush covered ridges and ravines.

2. AUTHORITY

The Program was prepared pursuant to Section 41863 of the Health and Safety Code (HSC) and Subchapter 2. Smoke Management Guidelines for Agricultural and Prescribed Burning of Title 17 of the California Code of Regulations (CCR). Section 80155 of the latter directs the BCC to develop and submit a smoke management program to ARB for their review and approval. In accordance with the California Code of Regulations, Title 17, Subchapter 2, Article 2, Section 80140(c) the smoke management program of the Sacramento Valley is designated as a regional smoke management program.

3. APPLICABILITY AND EFFECTIVE DATES OF PROGRAM

The Program applies to agricultural and other burning operations, as defined by Section 80101 of Title 17 of the CCR, that is conducted at all elevations in the Sacramento Valley Air Basin. Policies and procedures apply throughout the year unless otherwise specified in the Program. Many specific computer data gathering and analysis requirements apply only during the fall burning season. The Program took effect on October 30, 2001. Any future amendments to the program do not take effect until approved by the Air Resources Board.

4. PROGRAM GOALS

The Program goals are the following:

- Protection of air quality in the Sacramento Valley.
- Protection of public health and safety.
- Effective management of daily burning operations.

5. PROGRAM ELEMENTS

The basic Program elements include the following:

- **Local authority.** The Program places responsibility and authority on local air districts for implementation. Current air quality and meteorological information is provided to enable districts to make informed decisions.

- **Daily variable acreage allocation system.** The Program contains a formula to allocate burn acreage to the Sacramento Valley Air Basin. The burning management program matches the daily basinwide acreage allocation to each day's expected air quality and meteorological dispersion conditions. The system is designed to minimize air quality impacts.

- **Basinwide acreage distribution system.** The Program contains a formula to distribute the basinwide acreage allocation to local air districts. This computerized formula is based upon need (prorated acres), air quality (particulate matter levels), and meteorological conditions (zone ventilation ratings).

- **Conservative management.** The Sacramento Valley Smoke Management Program will be administered by a conservative approach with acreage updates, as warranted. Daily management will be consistent with prevailing air quality, meteorological, and burn data. Information used as feedback for decisions include hourly data on air quality levels, meteorological conditions, airport visibilities, and district field observation reports and smoke complaints. Program procedures will reflect the goals to protect air quality and public health, and to carefully monitor agricultural burning operations.

- **Minimum daily burning allocation.** The purpose of the minimum daily burn allocation is to minimize backlogs of ready-to-burn acres. No allocation is given on no-burn days.

- **Timing and review of burn allocation decisions and acreage updates.** Acreage allocation decisions are made close to the actual burning times in order to improve forecast reliability. The Program also requires routine review of burning, meteorology, and air quality conditions throughout the day. If warranted, acreage

updates can be requested or burning curtailed.

- **Established burn hours.** Burn hours are set in accordance with proven meteorological and air quality principles. These considerations include avoiding early morning and late afternoon surface inversions that entrap smoke at ground level and avoiding high fuel moisture levels.

- **Spatial and temporal burn placement.** Optimal distribution of burning throughout the air basin and over time minimizes air quality impacts. These management procedures reduce smoke concentrations. Burning management zones are established within each air district and help to geographically manage the burning.

- **Acreage shift.** A meteorological formula containing wind speeds, wind directions, and inversion heights allows a variable percentage of the total basin acreage allocation to be shifted north or south. The acreage shift formula is designed to better manage burning, respond to unusual meteorological conditions, and to protect downwind populated areas.

- **Strengthened enforcement.** The Program strengthens enforcement of the agricultural burning requirements through aerial and ground surveillance to ensure compliance.

- **Collection and dissemination of meteorological data.** Local air districts receive reliable real-time data on wind speeds, directions, inversion heights, and overall dispersion capacity throughout the region. Hourly data are provided from the automatic meteorological observation stations (AMOS) sites and Valley airports with operating control towers. Inversion and mixing height information is available from the Sutter Buttes AMOS, pibals, aircraft flights and profilers.

- **Collection and dissemination of air quality data.** Local air districts also receive information on how agricultural burning is impacting air quality. This information feed-back is available through airport visibility observations, PM10 and PM2.5 data and smoke complaints.

- **Collection and dissemination of burn data.** Air pollution control agencies compile their information on the amount of acres ready to burn, burned yesterday, burned by zone, and burned by crop category. This information is collected, summarized, totaled, and provided on a county-by-county, zone-by-zone, and crop-by-crop basis through the Smoke Management Program Coordinator (SMPC).

- **Computerization and centralization of data and communications.** The Program centralizes and computerizes burn data storage and communications. Daily, during the fall burn season, the SMPC collects and transmits information to the local air districts and the ARB via a website. The SMPC also stores and analyzes these data. The SMPC will conduct at least one workshop with air district burn staff to discuss SMP policies and procedures prior to the start of the fall burn season on September 15. The workshop(s) may be held in the north, central and south areas of the Air Basin. Testing of computer file transfers and website data communications will also be performed prior to the start of the fall burn season.

- **Public information.** The Program encourages the dissemination of information to the public on Sacramento Valley air quality levels. The availability of the CARB web pages and air quality database helps communicate information to the public. CARB and the Sacramento Metropolitan Air Quality Management District also provide information to the public, via the media on no- burn/high pollution days to request public cooperation in reducing emissions.

- **Permit fees.** The Program facilitates the establishment of permit fees based on acreage within each district for the purpose of funding.

- **Rice Straw Burning Reduction Act of 1991and Amendments.** This law requires a phase-down of rice straw burning in the Sacramento Valley Air Basin over a period of years. The law also allows growers to obtain emission reduction credits for phased-down acres.

  The Program provides a mechanism to assist local air districts in ensuring that rice growers comply with the requirements of the phase-down law. The intent of the Program is to monitor the phase-down process and

ensure a balanced phase-down throughout the year. Districts will encourage growers to select fields to meet the phase-down that are located in sensitive areas such as near airports, major roadways, and urban areas.

6. PROGRAM PARTICIPANTS

Program participants include: The Agricultural Burning Subcommittee (ABS) that consists of APCOs, or their representatives from the Butte, Colusa, Glenn, and Feather River districts. The ABS chair shall be appointed by the chair of the Technical Advisory Committee at the July meeting.

Program participants include:

The Sacramento Valley Basinwide Air Pollution Control Council (BCC)
The Sacramento Valley Air Basin Technical Advisory Committee (TAC)
The Sacramento Valley Air Basin air districts, agricultural departments and fire districts
Air Resources Board Meteorology and Stationary Source Enforcement Sections
Smoke Management Program Coordinator under contract to the BCC
Meteorological services consultant under contract to the BCC

7. PROCEDURES FOR ALLOCATION AND ADJUSTMENTS OF ACREAGE

Daily acreage allocation and distribution considerations

The allocation and distribution methods will use the following information:

1) Atmospheric stability, inversion heights, and depth of the mixing layer
2) Wind speeds and directions (upper level and surface)
3) Relative humidity, fuel moisture and cloud cover
4) Baseline air quality PM10 and PM2.5 data and airport visibilities
5) Quantity and location of agricultural residue to be burned
6) Consideration of downwind populated areas
7) Presence of prescribed burning and nearby wildfires

Emphasis shall be placed on the consideration of expected mixing depths during the burn hours in making burning management decisions. The meteorological services consultant and the ARB will comment on atmospheric mixing in their computer files and this will also be discussed each morning between the ARB duty meteorologist and the SMPC in determining the initial acreage allocation. The Smoke Management Program Coordinator may, if conditions warrant, reduce the acres allocated by ARB to the Air Basin.

Definitions of BMF and BAQF

The BMF is the basinwide meteorological factor determined from Tables 4 and 5 of Section 80320, of the CCR. These tables reflect average basinwide AM stability, and wind speed respectively. The average AM stability number comes from morning aircraft flights and temperature reports in the north (Red Bluff or Chico) and south (Sacramento) parts of the Valley and from surface temperature observations. The north and south numbers are averaged to determine the basinwide AM stability or the temperature difference from 3,000 feet to the Valley floor. The basinwide average windspeed is an average of north (Chico) and south (Sacramento) PIBAL wind measurements. Also used are observed winds, profiler data, pressure gradient nomograms, and ETA and AVN prognostic models. ARB meteorologists consult with the meteorological services consultant meteorologists and use their own experience and judgment.

The surface stations used to determine the AM stability number are: the AMOS stations CSF, AMO, ORO, BCC, BGG, NYU, WET, LCN, NAT, ORS, ATS, CDA, MAX, ABK, KRK, EPO, WOO and airports or air bases including BAB, SMF, SAC, CIC and RBL. To assure a prudent determination of morning stability, the emphasis would be placed on choosing the coolest of these locations that is representative of rice growing locations. The coolest of the morning temperatures in the north and south valley would be selected from the early morning hours of 12Z to 15Z. The ARB duty forecaster could choose not to

use the coolest site if it was considered to be unusually cold and possibly in error. The temperature at three thousand feet, from morning aircraft flights, may be modified if a dry adiabat followed from the warmest temperature of the sounding below three thousand feet intersected the three thousand foot level at a temperature warmer than the temperature reported from the flights. The duty meteorologist could choose to use the temperature at the intersection of the dry adiabat and the line representing three thousand feet.

The BAQF is the basinwide air quality factor that equals the average of one hour readings of $PM_{2.5}$ from midnight to 6:00 a.m. The ARB generates the air quality factor from data collected from the basinwide network of BAM samplers.

Other factors may be developed and approved to be used as air quality and meteorological criteria for determining burn days and allocations. These factors shall be based on scientific and technologically sound data to insure that air quality is protected. Factors will first be proven in a test equation situation.

Determining burn day status above 3000 feet mean sea level

Burn day status above 3000 feet msl is determined by ARB 500 mb pressure elevations. The 500 mb charts show large scale regional features (atmospheric pressure at 18,000 feet) that can be used to identify subsidence and stagnation causing poor dispersion. The Sacramento Valley uses 1 dekameter higher (other values may be selected) than the decision point for burning above 3000 feet. In place of the standard 3000 feet msl level the elevation may be specified in increments of 500 feet on a day-by-day basis as determined from vertical temperature soundings. Alternate criteria for determining burn day status may be approved by the BCC and implemented.

Standard allocation equation

The standard CARB acreage allocation equation is used throughout the year. The equation calculates a “theoretical maximum allocation” for the day.

The following “theoretical maximum acreage allocation” equation may be altered in the future as recommended by the Sacramento Valley Air Basin Technical Advisory Committee and the Air Resources Board.

Allocation = (-1/0.006) * (-170 + (1 * amstab) + (0.2049159 * 500mb12) - (0.3579679 * WS) + (1 * $PM_{2.5}$ 0-6))

Amstab = morning temperature difference between 3,000 feet and the surface
500mb12 = 500 millibar heights at 4a.m. from National Weather Service models
WS =average wind speed forecasted by the ARB through the mixing layer
$PM2_{2.5}$ 0- 6 = $PM_{2.5}$ basinwide average from midnight to 6a.m.

Spring increase to standard allocation equation

During the months of March, April and, if needed, May, the acreage allocations may be increased, due to improved atmospheric dispersion, by a factor of 1.5.

Air quality reduction factors

Local air quality problems are determined on the basis of the average midnight to 6a.m. $PM_{2.5}$ readings for one or more stations in or near the APCD. The AQ reduction factors (0-1) used in the distribution equation are found in the ARB allocation page.

The following table lists the $PM_{2.5}$ air monitoring station(s) associated with each county or air district for purposes of calculating the air quality reduction factor.

Corresponding $PM_{2.5}$ Monitoring Station(s) for Air Quality Reduction Factors	
COUNTY	MONITORING STATIONS

Butte	Chico and Gridley
Colusa	Colusa
Glenn	Willows
Placer	Roseville
Sacramento	T Street or Del Paso Manor
Shasta	Anderson
Sutter	Yuba City
Tehama	Willows
Yolo-Solano	Davis and Woodland
Yuba	Yuba City

When any district's midnight to 6:00 a.m. average $PM_{2.5}$ is >= 27 micrograms per cubic meter (ug/m^3) increasing concentrations will result in increasing reductions in allocated acres (e.g., 27-28 is 20%, 29-30 is 40%, 31-32 is 60% and 33-34 is 80%).

When any district's midnight to 6:00 a.m. average $PM_{2.5}$ is >= 35 ug/m^3 a no burn day will be declared in that district.

North wind days

The ARB will reduce basinwide allocations on north wind days, if necessary, to a maximum of 8,000 acres to avoid air quality impacts on urban areas in the southern part of the Sacramento Valley. On north wind days when the basinwide average wind speed exceeds ten (10) MPH the Basin Met Factor (BMF) would be set to zero (0). In the allocation file, the ARB provides notification language such as "Due to anticipated extensive air flow from north to south, the Air Resources Board has curtailed the basinwide allocation to 2500 acres.". The criteria for determining "extensive airflow from north to south" are: widespread measured or forecast north winds and a north to south pressure gradient.

Rainfall effects

The ARB allocations will be reduced to 2000 acres after a daily (as noted on the 12Z station reports or other available information) rainfall amount that exceeds an average of 0.05 inches in the Valley. The BCC policy is to reduce large ARB acreage allocations whenever wet conditions exist in the Valley and then increase acreage allocations on subsequent days as the fields dry out. The wet day calculation is as follows:

RI today	Highest RI Previous 3 days	Day is
0.00 - 0.00	1.51 or >	Wet
0.01 - 0.05	0.81 or >	Wet
0.06 - 0.11	0.51 or >	Wet
0.12 - 0.17	0.25 or >	Wet
0.18 or >	none required	Wet

District staff, or their agents, shall perform crackle tests, as appropriate, on rice straw following 0.15 inches (or more) average rainfall. Districts, or their agents, shall also advise growers of their responsibility to conduct a crackle test before burning.

Special circumstances - Adverse air quality conditions

A 'no-burn' day may be declared or the calculated acreage allocation reduced by the Air Resources Board if the burning of that acreage may cause or contribute to a smoke episode. For this purpose a smoke episode may be defined as an area characterized by either citizen complaints, restricted airport visibilities due to smoke, wildfires, or high PM2.5 levels. In making these decisions the complaints must be verifiable and the visibility reductions must be evaluated for the effects of relative humidity above 70%.

Special circumstances - Superior ventilation conditions

The ARB may, after consultation and concurrence with the SMPC, ABS chair, or delegated representative, increase the acreage allocation amount and recommend extension of the burning hours, if the meteorological conditions are favorable and current air quality readings indicate no air quality problems. The updated allocation may be selectively distributed by the ARB or SMPC around the air basin to avoid potential problems or satisfy a request for more acres. The ARB duty meteorologist has the authority to issue more than the minimum acres and extend burn hours prior to the regular ARB acreage allocation time. ARB meteorologists will be available during the lunch hour to provide updates and likewise districts will have staff available during the lunch hour to discuss updates. Also the ARB meteorologists must re-evaluate the allocation numbers and contact the SMPC or districts to discuss the re-evaluation prior to the lunch hour, as appropriate.

For this purpose an exceptionally favorable meteorological condition may be defined as vigorous southerly air circulation, and an originally calculated meteorological factor greater than 0.50. In this event the meteorological factor may be set to a higher number (e.g., 0.6 to 1.0) based on an updated forecast and/or hourly PM_{10}, $PM_{2.5}$ or favorable field observation reports may be used to calculate a new allocation. On many days air quality improves during the middle of the day because heating has increased the volume of the mixed layer into which emissions are dispersed. As cooling occurs later in the day the volume of air in the mixed layer again diminishes and particulate concentrations increase. The ARB will make the air quality data available throughout the day on their web pages. The ABS chair or a delegated representative may initiate a request that the ARB review the program data for a possible acreage increase. The update or updates may be issued at 9:30 AM, 10:30 AM, 11:30 AM and later as needed. ARB staff will review and share the written guidelines for update procedures with the BCC to provide more consistency and efficiency in the allocation of acreage on good burn days. The ARB will provide acreage updates directly to the districts, outside the fall burning period, as meteorological and air quality conditions warrant.

Communication procedures on early pre-storm days

The communication procedures for afternoons, evenings, and mornings on potential pre-storm, early-burn days are as follows:

The meteorological services consultant will initiate the discussion on pre-storm forecasts and messages to districts. The ARB, ABS chair, SMPC, and the meteorological services consultant will confer before deciding on the content of the messages to be provided. The districts are expected to access the web pages to pick up the messages.

The SMPC and the meteorological services consultant will provide an initial message on the FB11AM file to advise of later messages:

Message at 4:00PM on the meteorological services consultant web pages
Message at 9:30PM on the meteorological services consultant web pages
Message at 5:00AM on the meteorological services consultant web pages

8. PROCEDURES FOR DISTRIBUTION AND ADJUSTMENTS OF ACREAGE

During the intensive fall burn season, the SMPC distributes acreage to the districts using the distribution equation described below. The fall burn season is from September 1st through December 31st of each year. If significant rainfall shortens the fall burn season, the SMPC will stop operations prior to December 31st. The Agricultural Burning Subcommittee, ARB, and the SMPC will review harvest data and current and forecast rainfall amounts to determine when the intensive fall burn season (i.e. SMPC operations) should be activated and deactivated.

The allocation of acreage to the growers should be managed by either the APCD/AQMD or the county Agricultural Department whichever has the assigned responsibility. This would ensure that the allocation decisions are made by the agency that has direct access to the air quality and meteorological files and is based upon the best, current data available. If fire districts issue burn authorizations they shall report in a timely manner and on a daily basis to the district all allocations made to growers in order to ensure that inspectors are aware of permissive burns as they occur.

Fall burn season acreage distribution equation

The SMPC uses the distribution equation during the intensive fall burn season. The distribution equation is used to distribute acreage to the districts and uses the ARB initial basinwide acreage allocation or a lesser allocation as jointly determined by the ABS and ARB.

The distribution equation does not apply to Shasta and Tehama counties. Those counties will receive 200 acres per day, unless they request additional acres from the SMPC. Those counties will receive no acres if a no-burn day is declared.

The distribution equation is:

County Acreage Allocation = CP * BA

The variables of the equation are:

VARIABLE	VALUE OF VARIABLE
Basin Allocation (BA)	BA from initial CARB allocation
County Proportion (CP)	CW / sum of all CW
County Weighting Factor (CW)	AQ * VR *(CF/BF+CR/BR+BS/CS)
Air Quality Factor (AQ)	0-1
Ventilation Rating Factor (VR)	1-5
County Fall Total Acres (CF)	Total burned to date
Basin Fall Total Acres (BF)	Sum of all CF
County Ready Acres (CR)	As reported by each county
Basin Ready Acres (BR)	Sum of all CR
County Success Ratio (CS)	0-1
Basin Success Ratio (BS)	0-1

Definitions of Ventilation Rating Factor and Success Ratios:

The ventilation rating factors are provided by the meteorological services consultant and are the average of the total zone rating factors of each district (e.g. Glenn has four zones and thus four zone rating factors). The factors are a composite number based upon available meteorological data and have been assigned values, from one to five, and the corresponding qualitative judgments by the meteorological services consultant:

1) Considerable impact in region regardless of placement of fires
2) Considerable impact in region if caution in placement of fires not used
3) Some impact in region but impact is acceptable
4) Minor localized impact within region
5) Minimal or no impact in region

The ventilation rating is a subjective number produced by professional meteorologists trained specifically in smoke management practices. The meteorologist takes into account surface and upper level wind strength and direction, atmospheric stability, field moisture, major roadways, urban areas, and approaching frontal systems. Prior to assigning the rating for specific regions the duty meteorologist reviews all relevant weather information that may have an impact on the movement and dispersion of smoke from burning agricultural field waste. The meteorologist reviews satellite and radar images and surface and upper air prognostic charts to gain a complete understanding of the current and future weather pattern within the Air Basin during the burning period (generally 11am to 3pm). After reviewing all relevant documents and preparing the forecast, the final task prior to disseminating the information is to assign the rating for each designated region.

The Success Ratio for each county is derived from basin totals divided by county totals for ready acres and the 2000 historical planting acreage of rice, corn, wheat and safflower.

2000 acreage information

District/County	100% rice	50% corn	100% wheat	100% safflower	County Totals
Butte	98,000	7,106	2,500	600	108,206
Colusa	147,270	3,660	18,900	11,600	181,430
Glenn	87,383	16,285	17,127	1,195	121,990
Placer	15,799	653	441	32	16,925
Sacramento	7,606	37,225	15,018	7,349	67,198
Sutter	118,157	6,992	9,500	16,078	150,727
Yolo/Sol	36,229	50,839	79,195	31,845	198,108
Yuba	36,620	1,053	538	210	38,421
Shasta	2,677	0	500	0	3,177
Tehama	1,000	1,300	2,000	250	4,550
Basin Totals	550,741	125,113	145,719	69,159	890,732

Success Ratio =
IF (((Basin ready/Basin 00 subtotal)/(county ready/county total))>2,2 ((Basin ready/Basin 00 subtotal)/(county ready/county total)))

Spring, summer, and winter acreage distribution system

During times outside of the intensive fall burn season the ARB will distribute the allocated acreage directly to the counties. The SMPC is not in operation during this time.

The ARB will distribute acres to the counties during this time based upon the following table. The percentages or minimums in the following table represent the approximate total county to total basin burning acreage for the winter, spring, and summer seasons. The primary crop residues burning during these time periods are from rice, wheat, corn, safflower, and orchards.

Notwithstanding these percentages, the ARB may adjust the distribution based upon current burning, meteorological, and air quality factors.

SPRING, SUMMER AND WINTER ACREAGE DISTRIBUTION SYSTEM	
COUNTY	**ACREAGE DISTRIBUTION**
Butte	17 %
Colusa	17 %
Glenn	13 %
Placer	5 %
Sacramento	9 %
Shasta	200 acres minimum, unless county requests an update.
Sutter	17 %
Tehama	200 acres minimum, unless county requests an update.
Yolo/Solano	15 %
Yuba	7 %

North/South acreage shifts

The north/south acreage shift will occur only on those days with the meteorological conditions described below or when the ARB declares a north wind day. The decision to shift must be based upon current meteorological conditions and a prediction that the conditions will persist for the time needed to complete burns and disperse the smoke. Data from all AMOS and airport stations basinwide must meet the criteria for a shift. The range of shifting can vary from 10% to 50% of the basinwide allocation.

Wind direction (WD): consistent, basinwide northerly/southerly flow surface and aloft (WD 0 or 1)
Duration time (DT): more than 2 hours measured/predicted to continue several hours (DT 0 or 1)
Wind speed (WS): =>5 or =>8 or =>11 MPH (WS 10-30%)
Mixing depth (MD): =>2000 or =>3000 Feet (MD 10-20%)
Shift%: = WD * DT * (WS%) + (MD%)

The North shift goes to: Glenn, Butte, and Sacramento and Yolo/Solano's south zones and Colusa's north zones.

The South shift goes to: Colusa, Sutter, Yuba, Placer, and Sacramento's and Yolo/Solano's north zones only.

The meteorological differences north and south of the Sutter Buttes will be taken into account.

Spatial management of burning

When meteorology and/or air quality is more favorable in one or more areas, additional acreage will be placed in those areas or directly to a zone(s) within a district around the valley but such re-distribution shall never over-concentrate the acreage in any part of the valley. The re-distribution of acreage by the SMPC will take into account weather and air quality differences between the north and south sections of the Valley. Prescribed burning will be incorporated into the spatial management of the burning, by the district, in order to minimize air quality impacts. Project size, elevation and location will be factors considered in the management of prescribed burning.

9. ALLOCATION TYPES AND UPDATES

Initial allocation: During the fall burning season the ARB and SMPC will consult on daily meteorological and air quality conditions, prior to the ARB allocation decision, to determine the appropriate initial basinwide acreage allocation for the day.

Interim allocation: After the initial basinwide acreage allocation is determined for regular burn days, the SMPC may issue acreage updates to districts, at their request, up to the next, interim basinwide allocation limit of 4,000, 7,500, or 10,000 acres. Coordination is required between the ARB and SMPC to exceed the interim limits. At the 4,000 and 7,500 acre thresholds the Meteorology Section makes the decisions so that a prompt response is given to the SMPC.

Maximum theoretical allocation: The acreage allocation permitted by the applicable equation that can only be exceeded if an updated allocation is given by CARB.

Updated acreage distribution: The SMPC may update the distribution of acres to districts, if warranted, between the initial and interim allocations and up to the maximum allocation limit for days with an initial allocation of greater than 4000 acres. Districts must provide field observation information, the latest meteorological data (remember data polling times), and air quality reports when requesting updates from the SMPC.

Updated ARB acreage allocation: The ARB and the SMPC may consult and jointly decide to update the initial, interim, or maximum allocation after they have received new air quality and meteorological data and reports from district field observations that represent conditions after morning burning. Allocation updates shall be available only when air quality and meteorological data indicate.

Districts will provide information on the total acres burned and designated to be burned up to the hour of the request for updates to the ARB. The information will include reports of district observations of burning conditions and local meteorology and air quality. Report information to the ARB, via fax, on the reporting form provided by the ARB. This information will be used to evaluate the air quality impacts of burning already underway or completed.

10. DATA MANAGEMENT FOR THE INTENSIVE FALL BURN SEASON

Districts shall keep track of ready and burned acreage using the software provided or a facsimile that produces the same file structures and summary data. The purpose of this database software is to maintain files of each grower's fields, total ready acres and total burned acres. The software also produces a summary data file for the previous day. This file is sent to the SMPC and entered into the basinwide data tracking system. In reporting "prorated acres" each district or county may add up to 25% of their total planted rice acres with the fields added after they are harvested and meet drying times. Districts or counties may also augment the rice number with any other crop burning acreage.

11. COMPUTER FILES AND DATA RETRIEVAL TIMETABLE

Computer files: The burn program relies on timely transmission, review, and analysis of pertinent air quality, meteorological, and burning information. These data are critical to burning management decisions. Computers are used to transmit the data. Computer files generated during the fall burn season are:

1) District files of ready acres and yesterday's burned acreage and complaints
2) The meteorological services consultant zone ventilation ratings for distribution equation
3) The meteorological services consultant daily weather discussion and AMOS and airport data
4) SMPC's daily comments preceding acreage distribution table
5) Basin acreage distribution to districts and season to date summary
6) Ready file checklist and comments
7) ARB acreage allocation, meteorological factors, air quality data, and comments
8) ARB BAM tables for yesterday and 0-6 a.m. today
9) Complaints to the ARB by district
10) AMOS and airport data for latest hour or last identified hour
11) Zone file with yesterday's specific zone and crop burning and season summary

Computer file transmission and access timetable:

Airport data are collected and reported at the top of each hour from FAA tower controlled airports only. If the international airport reporting format is difficult to understand, contact either the meteorological services consultant or SMPC for assistance. Complete Valley airport data are available at 15 minutes past the hour.

The AMOS data are collected each hour through a radio and telephone telemetry system. The AMOS data from 16 stations are collected in sequence and start to be reported on the bulletin board system at 15 minutes past the hour. Complete Valley AMOS data may not be available until 30 minutes past the hour.
Districts will send their ready file information to the SMPC's e-mail address before 8:10a.m. each day.

Filename	Usual access time	Contents
FB8AM	8:30 AM	SMPC preliminary comments and reminders SMPC ready file checklist and comments Meteorological services consultant preliminary weather discussion Current airport and AMOS data ARB BAM tables for yesterday and 0-6 a.m. today ARB burn day decision above 3000 feet msl (916) 445-0745
FB9AM	9:30 AM	SMPC basin acreage distribution table SMPC file retrieval checklist and comments Meteorological services consultant final weather discussion Current airport and AMOS data ARB equation factors and basinwide acreage allocation and complaints table SMPC zone and crop burning file
FB11AM	11:30 AM	SMPC information, if necessary, for allocation update Meteorological services consultant latest weather information

Early burning information: The FB8AM file is used to communicate all decisions regarding early burning and acreage distributions. Files may be uploaded on the bulletin board and can be retrieved as early as 7:00 AM depending on conditions.

12. BURNING AUTHORIZATION AND RETURNING ACRES

Daily acreage distribution and burn authorization

Districts may not authorize field burning on any day before obtaining a burn decision and acreage distribution for that day pursuant to this Program. Pruning burning may be authorized, according to the established burn hours, after confirming a burn day decision.

Personnel on duty and holiday and weekend staffing

Districts may not allow field stubble burning unless the district has personnel on duty administering the agricultural burning program. This includes holidays and weekends.

Districts may allow prunings only burning, without personnel on duty on weekends or holidays via a recorded announcement. However, districts must first ascertain that those days will, in fact, be burn days and obtain acreage. During the intensive fall burn season, this means that all districts must access the FB8AM computer file to avoid conflicting with a no-burn decision. Districts may contact the ARB, (prior to 3:30 PM on the day before a holiday or weekend) to request, in advance, the ARB's extended outlook for conditions during that time period. The ARB will provide an outlook to help districts make staffing decisions.

Responsibility to return unburned acreage

The purpose of this requirement is to redistribute unused burn acreage. The following requirement applies throughout the year and helps in burn efficiency and program management.

If a district will be closed on weekends or holidays, the district must notify the SMPC or ARB in advance so that the district's acres may be given to other districts. The districts shall also report unused acreage to the SMPC or ARB during other times so that the acres may be redistributed. Returning unused acres is required as soon as practicable.

13. TYPES OF DAYS

In accordance with state regulation either the local air district or the Air Resources Board may use their judgment in determining the type and/or amount of burning allowed on any given day if it is more stringent. The ARB will identify those days when an overriding judgment decision is made.

The Air Resources Board decision of a no-burn day above 3,000 feet will be taken into consideration in making a decision regarding the type of burning allowed below 3000 feet on that day.

No-burn days

No-burn days are days with zero acreage allocated to the district or county resulting from the equations or the no-burn day criteria specified in this Program.

A no-burn day will be declared if any of the following criteria are met:
1) A.M. stability is >= 17 degrees Fahrenheit and the midnight to 6:00 a.m. average basinwide $PM_{2.5}$ is >= 30 ug/m^3
2) Average basinwide north wind speed is forecast to be >= 20 miles per hour (applies from September 1st through December 31st)
3) A.M. stability is >= 17 degrees Fahrenheit and the midnight to 6:00 a.m. average ~~basinwide~~ $PM_{2.5}$ is >= 32 ug/m^3 at three or more monitoring sites

During the intensive fall burn season, the SMPC or ABS will notify districts of a possible ARB or ABS decision to declare a no-burn day in the FB8AM file comments. During the intensive fall burn season the SMPC will announce final no-burn decisions, from either the ARB or the ABS, in the FB9AM computer file only.

No burning will be declared, in certain burning management zones, on Spare The Air days as specified in the Administrative Policies section of this Program. The local district also has the authority to declare it a no-burn day within their jurisdiction.

Prunings only days

The ARB will declare a prunings only day if either of the criteria below are met and a no-burn day is not declared. The allocation and distribution to each county will be a minimum of 200 acres.

1) A.M. stability is >= 17 degrees Fahrenheit and the midnight to 6:00 a.m. average basinwide $PM_{2.5}$ is 28 to 29 ug/m^3.
2) Average basinwide north wind speed is forecast to be >= 20 miles per hour (applies from January 1st through August 31st)

During the intensive fall burn season, the SMPC will announce any prunings only burning decisions, from either the ARB or the ABS, in the FB9AM computer file only. Prunings does not include tree stumps from pushouts.

Restricted field days

The ARB will declare a restricted field day, if either of the two criteria below *is* met and a no-burn day is not declared. The allocation and distribution to each county will be a minimum of 200 acres.

1) A.M. stability is >= 17 degrees Fahrenheit and the midnight to 6:00 a.m. average basinwide $PM_{2.5}$ is 25 to 27 ug/m^3 and the wind speed is forecast to be =< 5 mph, or
2) Average basinwide north wind speed is forecast to be >=15 miles per hour.

The ARB may declare a restricted field day if the A.M. stability is >= 25 degrees Fahrenheit.

Districts may use some of this acreage for burning of small amounts of ditches, field stubble or spot burning, if such burning will not adversely affect downwind air quality. Only 50 total acres of field burning is allowed per county.

- **Regular days**

Regular burning days are days with a theoretical acreage allocation equal to or greater than 2,000 acres and when the ARB has not designated pruning only or restricted field days. Allocation per district or county will be 200 acres or more. The minimum of 200 acres, rice acre equivalent will be available to burn unless the ARB declares it a basinwide no-burn day or the ARB designates no burning in the district or certain zones of the district because of high $PM_{2.5}$ values in that district.

14. BURN HOURS

Agricultural burning ignition hours for field crops shall be set as follows (all times are local times). Burn hours are from 10:00 AM to 5:00 PM for spring (March 1 - April 30), and summer (May 1 - August 31) burning periods. However, during the fall (September 1 - December 31) and winter (January 1 - February 28/29) burn seasons burn hours shall be from 10:00 AM to 3:00 PM. During the intensive fall burn season all field crop fires must be out (no flames) by 4:00 PM to minimize high afternoon particulate readings, unless the basin receives a late update or burn hours are extended.

The ABS, after concurrence by the ARB, may extend burning hours before and/or after the standard burn hours but only on a basinwide basis, with favorable south winds, or impending rainfall. If the ARB provides an update after 2 PM the ARB will extend the burn hours to a specific time determined by them. Extending afternoon burn hours presupposes improving dispersion or maintaining good dispersion.

Ignition hours for orchard crops shall be 8:30 AM to 5:00 PM, or one hour before sunset whichever is earlier, year round. The district APCO may, after consideration of air quality impacts, allow additional orchard prunings to be added as fuel to an existing hot base fire after the ignition hours.

15. SMPC DATA COLLECTION AND ANALYSIS

The SMPC will collect air quality, meteorology, and burn acreage data in computer files for sharing among program participants. The data will be analyzed and included in program comments and in the final program reports.

16. COMPLAINT HANDLING

A standard Complaint Report Form (see Figure 1) has been created for the purpose of uniform handling and completeness in data gathering. Districts will record all agricultural burn complaints on this form or a reasonable facsimile.

FIGURE 1

SACRAMENTO VALLEY AIR BASIN BURNING COMPLAINT INVESTIGATION REPORT

Complaint received by:
Complaint filed on: Date and time of problem: ARB referral:
Complainant Name:
Address:
Phone: Repeat complaint:

Exact location of smoke problem: Burning management zone:
Duration of smoke problem in hours or minutes:
Nature of smoke problem: (visible plume, smoke in area, odor of burning, breathing problem):

Wind speed and wind direction at time of problem:
Wind shift during day and directions:
Weather conditions at time of problem (clear, cloudy, raining, cold day, warm day, etc):

Burn day above 3000 ft Below 3000 ft Basin allocated acres District acres
Allocation update Acres burned: Agriculture Other

Air quality levels: Ozone location PM10 location

Contacted other fire control agencies (USFS, CDF, FD) regarding other possible fires:

Type of burning problem (circle): rice other field orchard wildland levee forestry refuge residential structural wildfire disease illegal unknown

Source of burning within county or outside county:

Complaint verified as related to agricultural burning and reported:
Investigated by:
Date of investigation:
Date and time complainant notified of disposition:

Districts will indicate on the form whether or not the complaint is valid, (i.e. due to agricultural burning operations). If a complaint is due to smoke impact from agricultural burning, it is valid. During the intensive fall burn season, districts will count all valid complaints each burn day and report them in the daily ready file. The target district regardless of the source of the smoke must count a valid complaint. Smoke complaints may also be reported directly to the ARB and then forwarded to the districts.

Each district shall maintain records, available to the public, of complaints regarding agricultural and prescribed burning and investigate each complaint within a reasonable time and report back to complainants on the results of the investigation. Districts shall keep complaint documents for a minimum of three years.

17. BURNING MANAGEMENT POLICIES AND PROCEDURES

Burn staff must pay special attention to spatial and temporal burning management. These procedures tie in with the burning management zones and the established burn hours but will vary somewhat depending on daily conditions.

Conservative burn management

Districts shall use air quality and meteorological data provided to assist them in making decisions as to where in their burning management zones and when, within the authorized burn hours, to allow burning. The ARB shall provide access to near real-time air quality data for BAM and TEOM sampling sites on a website.

Districts shall employ extra caution in allowing burning upwind and adjacent to urban areas, airports, and major roadways. Districts shall distribute their allocated acreage among their burning management zones to minimize emission densities and

protect down-wind urban areas. Districts should advise growers to use extra caution in burning upwind and adjacent to urban areas, airports, and major roadways and that they will be held responsible for any adverse downwind impacts.

Specific procedures include:

1) Evaluate the potential for fumigation based on surface wind speed, low inversion heights, and relative humidity and fuel moisture

2) Specify field lighting times by the hour so that burning times are staggered

3) Establish a method of allocating to the burning management zones. Authorize only small fires in remote areas if dispersion conditions are poor or for early burns

4) Allow flexibility in shifting acreage among zones and to north and south

5) A district will notify the adjacent district(s) whenever a considerable number of acres are allocated to a zone contiguous to another district or air basin

6) A map of the zones in each county shall be available for daily use in all districts to indicate the locations of all authorized burns on the current day. Uniform maps will be used for plotting observed winds and locating and scheduling allocated burn acres as well as coordinating with other districts. Furthermore, all districts, or their agents, shall have ready access to maps of agricultural burning site locations within their jurisdiction.

Burn placement and timing

Considerations in the placement of burns or restriction of burning in certain zones should include the following factors:

1) The combination of wind speed, distance from populated areas, and plume dispersion will determine the designation of specific no-burn zones

2) Wind directions, both surface and aloft, current and forecasted for the county are critical - always access the latest wind data to verify wind directions before making placement decisions as directions and speeds often vary with altitude

3) Wind speeds, both surface and aloft, current and forecasted for the county are critical - be aware of the potential for smoke transport downwind especially when wind speeds exceed 8 mph and an inversion is present

4) Locations of populated areas relative to current and forecasted wind speeds and directions will be major factors in making burn decisions

5) Burning of a small field versus a large field if the field is adjacent to and upwind of populated areas

6) Avoid concentration of burns spatially to lessen smoke concentrations

7) Avoid concentration of burns in time to lessen smoke concentrations through the staggering of ignition times

8) Higher fuel moisture creates more smoke and reduces plume rise thereby causing greater impacts on downwind receptors

9) As necessary, use early test fires of small acreage in making decisions

10) There is no substitute for field observations in understanding burn conditions

District communications with growers

Effective burning management requires better and timelier communication with the growers so that the logistics of

conducting the burning can be accomplished. Districts should use answering machines and printed burn lists to advise growers near the top of the burn list to be ready to burn to make the system more efficient.

18. PROGRAM OVERSIGHT, REVIEW AND TRAINING

Each District shall select at least one staff person to coordinate and oversee the agricultural burning program and conduct daily analyses of the data. Staff are required to attend an annual program review meeting prior to commencement of the fall burn period. District staff will meet with SMPC and ARB in August for a pre-fall program review. In December burn staff will meet to analyze fall program results and complaints.

The ARB Meteorology Section and SMPC will provide training for staff at air districts and/or agricultural departments that implement the Sacramento Valley Agricultural Burning Management Program prior to the start of the fall burning season.

The SMPC shall provide annual training to back-up personnel appointed by the TAC on daily procedures for distributing acreage and issuing updates. The training shall include the following: discussion of meteorological and air quality indicators used in determining the initial allocation, process of receiving data from each district, process of backing up previous day's data, the equations and software used to distribute acreage to individual districts, process and software for uploading comments and distribution table to the daily files, and the process for issuing updates.

19. GENERAL BURNING REQUIREMENTS FOR GROWERS

Drying times

It is imperative that the agricultural wastes be sufficiently dry to ensure proper burning through observance of required drying times. For rice straw, after 0.15 inches or more rainfall, a representative sample of the straw must pass the crackle test to be legally burned. The increase in fuel moisture due to rainfall and high humidity in the Valley results in poor combustion.

Drying times for rice fields harvested with the "stripper header" method shall be 3 days after the first frost found on the field and if the straw passes the crackle test; or 3 days after mowing and spreading or chopping straw; or if the district verifies that the straw is sufficiently dry and passes the crackle test the field will be considered ready to burn.

Ready to burn list

All persons wanting to burn must notify their local air pollution district office to get on the ready to burn list. Only fields that have been completely harvested can be placed on the burn list. All pertinent burn information requested by the air pollution office must be provided. Most (not all) burning is allocated on the basis of the ready to burn list in the order of reporting.

Consideration in issuing acreage shall be given to provide for geographical distribution of burning and burning near roadways, airports, and populated areas only when wind directions and other factors are favorable.

Ready Acres are defined as follows: A maximum of 25 percent of a district's (or county's) planted rice acres. Rice fields must have been harvested, passed the drying time and be on a conditional rice burn permit. All other crop residues, in any amount, may be included on the ready to burn list but only when they are actually ready to be burned.

Burning authorization and acreage allocation

No person may conduct agricultural burning unless the local air pollution office has authorized the burning and allocated the acres for a specific field. Switching of fields without prior approval from the air pollution officer is prohibited. If burn acres are allocated and the burning is not done the permittee must contact the air pollution office at the earliest possible time to return the unused acres. The field will remain at the same position on the ready-to-burn list.

Ignition patterns

The approved burning techniques (e.g. backfiring, stripfiring, and X-firing at low wind speeds) that need to be used by

growers in lighting the fires will improve burning and minimize emissions of pollutants. Districts may authorize other lighting methods for safety reasons or if the crop does not lend itself to the approved techniques or if there are pressing time constraints to conduct the burning.

Harvest date

No field crop acreage that was harvested prior to September 10 shall be burned during the period from October 1 through November 15 unless justified by the grower and approval is granted by the local air pollution control officer.

Return unused burn acreage

Growers who are authorized to burn and do not burn their allocated acres must return unused acres to the district in a timely fashion. If a grower does not return unused acres (when no burning was attempted) to the district for re-allocation to other growers the field that was not burned shall be dropped to the bottom of the ready-to-burn list.

Chopped rice fields

Growers must report to the district any rice field(s) that they want to burn that have been chopped. Districts should take this information into consideration for possible higher fuel moisture content of the straw and poor combustion characteristics due to reduced air/fuel mixing.

20. PRESCRIBED BURNING

In accordance with Title 17, Subchapter 2 of the California Code of Regulations, Smoke Management Guidelines for Agricultural and Prescribed Burning any federal, state, local, or private entity that administers, directs, oversees or controls the use of public or private land, including the application of fire to the land shall comply with the requirements therein. "Prescribed fire" means any fire ignited by management actions to meet specific objectives and includes naturally-ignited wildland fires managed for resource benefits. Such entities proposing to conduct prescribed burning must submit a smoke management plan, when required by Title 17, to the air district of jurisdiction through the Prescribed Fire Information Reporting System (PFIRS) web site and also comply with the following requirements:

1) Receive a permit to burn,
2) Receive final approval for the smoke management plan from the air district of jurisdiction,
3) Request authorization to burn no later than the afternoon prior to the requested burn day, and
4) Maintain communication with the air district and report the burn status upon its conclusion

The air district of jurisdiction must approve the proposed burn through the PFIRS web site so that the burn information will be displayed on the PFIRS maps.

If the entity proposing a prescribed burn project requests a 48 hour forecast, 72 hour outlook, and a 96 hour trend be provided to them, the air district may ask for ARB's assistance in providing such information. The air district may also request that the ARB provide them with help in deciding on a burn up to 24 hours in advance of the ignition. Prioritizing burns for disease control, economic concerns, public safety etc. is an individual district decision. However, districts may, in daily burn authorization systems give preference to agricultural burning including prescribed burns employing fuel reduction measures and efforts to reduce smoke emissions.

During the fall burn period (September 1st through November 30th), all proposed prescribed burning shall be reported by districts to the SMPC at least one day prior to ignition. The information to be reported to the SMPC is indicated on the Prescribed Burning Information Form (see Figure 2). The SMPC will then notify the Basin districts in the computer files when a prescribed burn is scheduled at any elevation. This will provide the dissemination of burn information, promote coordination and enhance monitoring of agricultural and prescribed burning. Pertinent Internet WEB sites with meteorological and burning information will be accessed to keep apprised of current conditions of prescribed burns and wildfires. For prescribed burning districts may use the Sacramento Valley Smoke Management Plan or approved equivalent plans of the Northeast Air Alliance or ARB. Sacramento Valley and Northeast Air Alliance documents are in the appendices.

If the burning is conducted during the fall period at or below the daily variable elevation level and not higher than 2000 feet elevation then the proposed acreage will be considered part of the local acreage distribution. The ARB may adjust the elevation threshold for burn decisions in the Valley floor versus higher elevations, pursuant to Section 80250 (a). The ARB will consider revising a no burn decision above 2,000 feet elevation when the local district makes a request based upon review of local meteorological and air quality conditions. When persons or entities request prior afternoon decisions on burning at or below 2000 feet, the air districts must provide notification to the SMPC of the scheduled day of burning to allow planning for allocation and distribution of acreage. For prescribed burns below 2000 feet the SMPC will, if possible, take the acreage needed for those burns out of any excess acreage available over the initial allocation but below the interim allocation limit.

FIGURE 2

SACRAMENTO VALLEY AIR BASIN PRESCRIBED BURNING INFORMATION FORM

Air District:_____ County: _____

Project name: _____

Agency: _____ Contact: _____ Phone: _____

Total acres: _____ Fuel loading:_____ (tons/acre) Fuel consumed:_____

Fuel type:_____ Burn type: _____

Minimum elevation of burn: _____ Mean elevation of burn:_____ (feet)

Burn location: _____ Section-Township-Range:_____ Latitude and Longitude: _____

Nearest town/sensitive area is:_____ which is: _____ miles in:_____ direction
2nd Nearest town/sensitive area is:_____ which is: _____ miles in:_____ direction
3rd Nearest town/sensitive area is:_____ which is: _____ miles in:_____ direction

PRESCRIPTION
Preferred wind direction: _____ Wind speed:_____ (mph)
Preferred fuel moisture content%: _____

Preferred burn season: _____

Estimated start date of burn:_____ Start time of burn: _____ End date and time of burn: _____

Comments:

21. AEROMETRIC MONITORING

Aerometric monitoring includes measurements of both air quality and meteorological parameters.

Meteorological data available includes a zone ventilation rating table, AMOS data, airport data, aircraft soundings, rainfall data, dispersion forecasts, today's local weather discussion, and a five day outlook. Current location of the front, time of frontal passage, and rainfall data will be added to the meteorological files.

AMOS weather stations

AMOS station data are collected every hour. The AMOS stations are:

> Chico, Durham, Oroville, Biggs, North Yuba, Wheatland, Lincoln, Knights Landing, Natomas, Orland, Artois, Codora, Maxwell, Arbuckle, Kirkville, Esparto, Woodland, and Sutter Buttes

Airports

Airport data are collected every hour. The reporting airports are:

Redding, Red Bluff, Chico, Oroville, Beale AFB, Marysville, Auburn, Sacramento International, Sacramento Executive, Mather, Vacaville, Travis AFB and Stockton

Air quality monitoring stations

The air quality data available includes hourly airport visibilities, hourly PM_{10}, and hourly $PM_{2.5}$, data.

BAM $PM_{2.5}$ monitoring sites

BAM data are reported hourly. The ARB BAM stations in the Sacramento Valley are:

Chico, Gridley, Colusa, Willows, Roseville, Sacramento T Street, Yuba City and Davis

Local BAM sites are: Elk Grove, Folsom, Sacramento Del Paso Manor, Rio Vista, Vacaville, Woodland and Anderson

TEOM PM_{10} monitoring locations

TEOM data are reported on the hour. Local SMAQMD TEOM monitoring stations in the Sacramento Valley are:

Sacramento: Airport Road, Del Paso Manor and Health Department Stockton Blvd

22. ADMINISTRATIVE POLICIES

Guidelines for Revising the Smoke Management Program

1) Technical Justification:
Changes shall be based on sound technical justification supported by reasonable scientific data. Authors of proposed changes to the Program shall cite and summarize in writing the scientific data justifying the change and demonstrating reasonable assurance that the proposed change will help achieve the goals of the agricultural burning management program.
2) Retention of Local Control:
Changes should maintain or support continued local control of the agricultural burning management program so as to maximize responsiveness to the needs of the public and the regulated community.

3) Program Flexibility:
Changes should maintain flexibility so that the program can respond to dynamic air quality and meteorological conditions at the local and air basin level.

4) Air Basin Consistency:
Changes should promote consistency among the air basin districts to ensure equitable application of program policies and procedures while still recognizing variations as appropriate.

5) Good Public Policy:
Changes shall represent good public policy.

6) Experimental policies and procedures:
Changes intended for the purpose of gathering data while testing the benefits of a potential policy or procedural change, shall be prepared for review and approval by the Council as a formal Program amendment and incorporate a sunset clause beyond which the change terminates unless continued by the Council following an evaluation of the data gathered to date.

7) Comply with California Law:
Changes shall recognize the intent of the Legislature by the enactment of Health and Safety Code Section 41850, that agricultural burning shall be reasonably regulated and not prohibited. This shall include taking into consideration several factors consisting of, but not limited to, the population of an area, geographical characteristics, meteorological conditions, the economic and technical impact of proposed rules and regulations and the importance of a viable agricultural economy in the air basin.

Testing policy

It is the BCC's policy to continuously improve the smoke management program and test modifications to the standard allocation equation. The ARB or any district required to participate in the agricultural burning requirements of the Program may propose a test allocation system, with specific parameters and criteria, to be administered during the intensive fall burn period. The following criteria shall apply:

1) The features tested shall be based on stated scientific and technologically sound criteria;
2) The TAC shall meet and agree to the inclusive dates of the test prior to the test being administered;
3) The agency proposing the test program shall coordinate with the SMPC and ARB to administer the test;
4) The SMPC shall provide such data as requested for the administration of the test, which is available as part of the implementation of the Program, including access to any software, databases and spreadsheets used in maintaining and logging any data maintained for the implementation of the Program;
5) An individual test shall be administered for a specified period; and
6) The agency proposing the test shall collect data and present a detailed analysis and recommendation to the TAC within three months of the conclusion of the test.

Spare-The-Air No Burn Days

Automobile emissions constitute the majority of ozone precursors emitted in the Sacramento Valley. However, if open burning can be postponed on days predicted to exceed ambient air quality standards for ozone this could help reduce the need for additional costly regulations on industry in the Valley. Therefore, a program will be conducted in the Sacramento Valley Air Basin on days with predicted ozone violations. As part of the program, a no burn day may be declared by a district on a day when the ARB and/or district predict(s) an exceedance of ambient air quality standards for ozone in that district.

The SMAQMD has conducted a Spare The Air Program since 1995 for days predicted to exceed the federal ambient air quality standards for ozone. On spare The Air Days, the SMAQMD asks the public to curtail driving and other discretionary activities that contribute to the formation of ozone. Beginning in 1995, the SMAQMD and the other Sacramento Valley districts participating in Sacramento Area Regional Ozone Attainment Plan (the SMAQMD, Feather River AQMD, Placer APCD, and Yolo-Solano AQMD), began to declare no burn days in the following burn zones on Sacramento Regional Spare The Air Days:

SACRAMENTO REGIONAL SPARE THE AIR DAYS	
AIR DISTRICT	**NO-BURN ZONES**
SMAQMD	all
Yolo-Solano AQMD	2,4,5 and 6
Feather River AQMD (Sutter County only)	zone 6 Sutter County (caution recommended in zones 4 and 5)
Placer APCD	2 and 3 (caution recommended in zone 1)

Since 1995, Sacramento Regional Spare The Air triggers were based upon the PSI for the federal 1hour ozone standard. In 1997, the federal government introduced the 8 hour ozone standard. Districts under the Sacramento Area Regional Ozone Attainment Plan for the federal 1hour standard fully expect to be deemed non-attainment for the new ozone standard.

Communication procedure:

When the SMAQMD predicts a Spare The Air Day for tomorrow in the Sacramento Region, the SMAQMD will notify the burn program staff at the affected districts, the ARB and SMPC by both fax and telephone call.

When the SMAQMD revises ozone forecasts upward to a Spare The Air Day status for today in the Sacramento Region, the SMAQMD will immediately telephone the above-mentioned parties and send the Spare The Air Day fax. Any further burning activity in the affected burn zones will be prohibited for the Spare The Air period.

ARB will include the Spare The Air Day status in its morning burn decision as a required no-burn day for the affected districts or zones thereof. This information will be made available to districts calling in for the burn decision.

Note: On Sundays or holidays, the ARB may modify the forecast burn decision for burn zones surrounding the SMAQMD if meteorological conditions have either improved or worsened since the time that the Spare The Air forecast was made. The ARB has access to the SMAQMD's real-time ozone data, which can be used in making this decision. The forecast decision for the SMAQMD would remain the same, unless conditions have worsened.

The Shasta and Tehama County air districts have historically notified adjacent districts, when ozone violations were predicted on specific days, and requested a cessation of burning on those days. The Shasta and Tehama air districts will continue a Spare The Air program for their districts regarding ozone violations and agricultural burning decisions. If any districts are predicting a violation of the federal 8-hour ambient standard for ozone, they will notify the burn program staff at all other districts in the Sacramento Valley Air Basin, the ARB, and the SMPC both by fax and telephone call. It is highly recommended that the other districts voluntarily cooperate in not allowing burning on that day.

When the SMPC is in operation, the Spare The Air burn decision(s) will be included in the daily computer files.

In reference to agricultural burning and no-burn days it is recognized that other sources of emissions, not specifically covered by this Program, also contribute to air quality problems in the Sacramento Valley. Due to the specific subject of the Program, the other sources are referenced in the SVAB Basinwide Control Council Resolution 1-93 which calls for specific actions by Districts to reduce emissions from those sources. The Resolution and its objective of reducing emissions from those sources will be reviewed each year.

Notwithstanding the burn day status results of the acreage allocation equation in the Smoke Management Program, the APCO or designee of a district should declare a no burn day for all or part of their jurisdiction on any day when local or regional conditions result in a forecast of an exceedance of a federal or state air quality standard, such as ozone, particulate matter or any other standard where agricultural burning could cause or contribute to that exceedance.

$PM_{2.5}$ forecasting began in the Sacramento Metropolitan AQMD in the winter of 2003-2004. The Sacramento Metropolitan AQMD will advise the local Agricultural Commissioner and ARB Meteorology staff when this level of pollutant is forecast and will declare a no burn day for its jurisdiction. While such forecasts would be expected at times during the winter months, some forecasts may occur during the summer ozone season at or near the July 4th holiday and/or during the impacts of wildfires.

Public meetings, workshops, and hearings

The BCC, TAC, and/or districts will, (starting in January), conduct public workshops and hearings prior to the adoption and implementation of the Smoke Management Program to solicit comments from interested persons and explain the goals and requirements.

Daily air quality and agricultural burning information

In the effort to keep the public informed, the BCC, local air districts, or ARB should provide daily information to the public via the media, or other means, on air quality levels in the Valley and agricultural burning information. The advent of the Internet provides the opportunity to disseminate information to the greatest degree. The ARB web pages should be used to convey this information. The web pages will also contain the names and phone numbers of the air quality districts in the Valley.

Wildland fire use fires

Whenever wildfires, within the Sacramento Valley Air Basin or outside the Basin, are used by forestry agencies as a wildland fire use (WFU) fire the TAC Agricultural Burning Subcommittee (ABS) should review the potential impacts of those fires on the Basin. If the smoke from the WFU fire adversely affects the air quality in the Basin the ABS should request the Smoke Management Plan for the fire. If the ABS considers the air quality impact significant a letter should be sent by the Chairman of the Basin Control Council to the appropriate local air agency and the Air Resources Board notifying them of the smoke impact and asking that the fire be controlled.

Emission factors for rice equivalency

The emissions factors used to determine rice equivalence for other crops are shown below.

CROP RESIDUE	PM_{10}	$PM_{2.5}$	NOx	SOx	VOC	CO		FUEL LOADING
	POUNDS PER TON							TONS PER ACRE
Alfalfa	28.5	27.2	4.5	0.6	21.7	119.0		0.8
Barley	14.3	13.8	5.1	0.1	15.0	183.7		1.7
Corn	11.4	10.9	3.3	0.4	6.6	70.9		4.2
Oats	20.7	19.7	4.5	0.6	10.3	136.0		1.6
Rice	6.3	5.9	5.2	1.1	4.7	57.4		3.0
Safflower	17.7	16.9	4.5	0.6	14.8	144.0		1.3
Sorghum	17.7	16.9	4.5	0.6	5.1	77.0		2.9
Wheat	10.6	10.1	4.3	0.9	7.6	123.6		1.9
Almond	7.0	6.7	5.9	0.1	5.2	52.2		1.0
Apple	3.9	3.7	5.2	0.1	2.3	42.0		2.3
Apricot	5.9	5.6	5.2	0.1	4.6	49.0		1.8
Avocado	20.6	19.4	5.2	0.1	18.5	116.0		1.5
Bean/Pea	13.7	13.0	5.2	0.1	14.2	148.0		2.5
Cherry	7.9	7.4	5.2	0.1	6.0	44.0		1.0
Citrus	5.9	5.6	5.2	0.1	6.8	81.0		1.0
Date Palm	9.8	9.3	5.2	0.1	3.8	56.0		1.0
Fig	6.9	6.5	5.2	0.1	6.0	57.0		2.2
Grape	4.9	4.6	5.2	0.1	3.8	51.0		2.5
Nectarine	3.9	3.7	5.2	0.1	2.3	33.0		2.0
Olive	11.8	11.1	5.2	0.1	10.3	114.0		1.2
Orchard	7.8	7.3	5.2	0.1	6.3	66.0		1.8

Peach	**5.9**	**5.6**	**5.2**	**0.1**	**3.0**	**42.0**		**2.5**
Pear	**8.8**	**8.3**	**5.2**	**0.1**	**5.1**	**57.0**		**2.6**
Prune	**2.9**	**2.8**	**5.2**	**0.1**	**4.6**	**47.0**		**1.2**
Walnut	**4.2**	**4.0**	**4.5**	**0.2**	**4.8**	**67.0**		**1.2**
Grassland	**15.9**	**15.2**	**4.5**	**0.6**	**10.7**	**114.0**		**2-3.2**
Chaparral	**20.1**	**17.3**	**3.5**	**0.1**	**14.4**	**153.7**		**7-23**
Forest	**19-30**	**17-27**	**3.5**	**0.1**	**8-21**	**154-312**		**7-23+**
References: USEPA AP42, Jenkins, Hardy, Peterson and Ward								

Adjustments for burned acreage

When a field is baled, grazed, flooded, or straw is substantially reduced due to other factors and there is a request to burn the remaining straw, the district APCO may review the conditions in the field and decide the percentage reduction in acres up to a maximum of 95% of the total acreage.

Trading of acres

The interdistrict/intercounty and intradistrict/intracounty trading of acres among rice growers is not allowed under this Program because it is prohibited by State law.

Intradistrict or intracounty trading among growers of any other field crop for places on the ready-to-burn list is allowed. Trading of places on the burn list must be in writing and approved in advance by the APCO of the district with jurisdiction over the fields involved in the transaction.

Conditions for special burn permits

Under California Code of Regulations special agricultural burning permits may be authorized by a district on no-burn days when all of the following conditions are met:

1) When denial of such permit would threaten imminent and substantial economic loss to a grower, and
2) If the district limits the amount of acreage that can be burned on any one day, and
3) The ARB forecasts downwind metropolitan areas will achieve the ambient air quality standards

Required report for special burn permits

A report of all special burn permits issued annually in a calendar year must be prepared by districts and transmitted to the ARB within 45 days of the end of the calendar year with the following information:

1) The number of special burn permits issued, and
2) The date of issuance of each permit, and
3) The person or persons to whom the permit was issued, and
4) Estimate of the amount of wastes burned pursuant to the permit, and
5) Summary of reasons why denial of each permit would have threatened imminent and substantial economic loss including the nature and dollar amounts of such loss.

Districts must report all acreage that is burned on no-burn days under special burn permits and any acres that were illegally burned or inadvertently burned during the fall burning period in the daily computer files. Inadvertent burning of rice straw

that has been removed from the field (i.e. baled straw) should be reported as miscellaneous burning in the computer files.

Updates:

Acreage updates requested from either the ARB or SMPC will be accompanied by the following information provided by the requesting district:

District name:
Burn contact person and phone number:
Current number of acres completed burning and total allocated to growers:
Spatial distribution of the fires in the burning management zones:
Description of field conditions (e.g., fuel moisture/wind speed/wind direction):
Characteristics of smoke plumes:
Complaints received at the district:
Smoke problems or high particulate monitoring readings:
Current local and Sutter Buttes winds:
Current local airport observations:
Downwind air quality and communication with adjacent district(s):

23. RICE STRAW BURNING REDUCTION ACT OF 1991

Start of program

September 1, 1992 and every September 1 thereafter

Rice straw burning

Schedule: From September 1 through August 31 of the following year

Previous phasedown schedule table deleted		
Year	Acres Burned of Planted	Acres Unburned
2001 on	Lesser of 25% or 125,000 acres	Equal to or more than 75%

Conditional rice straw burn permit

Starting Sept 1, 2001, the rice straw burning phasedown shall be implemented pursuant to the SB 318 provisions. The Conditional Rice Straw Burning Permit Program is found in the appendices.

Allocation and Updates

The daily allocation will be according to the Smoke Management Program. To the extent that resources are available, the state board and the agencies with jurisdiction over air quality within the Sacramento Valley Air Basin shall respond more quickly to requests for updates from county air pollution control officers to help maximize burning on days when meteorological conditions are best suited for smoke dispersion,

Exemptions

Percentage of burning is changed if the Act of God provision is invoked as determined by ARB and CDFA. Growers with 400 acres or less with disease and yield losses confirmed and if no violations within three previous years can burn total acreage every fourth year. Administrative burning is burning of vegetative materials along roads, in ditches, and on levees adjacent to or within a rice field. Administrative burning also includes burning of vegetative materials on rice research facilities

authorized by the county agricultural commissioner not to exceed 2,000 acres.

Complaints

To the extent that resources are available, the state board and the agencies with jurisdiction over air quality within the Sacramento Valley Air Basin shall improve responses to citizen complaints and, to the extent feasible, immediately investigate and analyze smoke complaints from the public to identify factors that contribute to complaints and develop better smoke control measures to be included in the Smoke Management Program, keep a record of all complaints, coordinate among other agencies on citizens' complaints, and investigate the source of the pollution causing the complaint.

Fees

1) Sacramento Valley districts shall impose fees on growers to cover implementing this program (HSC 41865 (t)).

2) The county agricultural commissioner shall charge the applicant a fee not to exceed the cost incurred by the county agricultural commissioner, in making the determination whether a grower qualifies for a conditional burn permit. This authority expires on January 1, 2009.

3) The BCC may impose and may require that districts within the Sacramento Valley Air Basin collect a fee not to exceed five dollars ($5) per permit issued by a district within the Sacramento Valley Air Basin for the purpose of administering all basinwide air pollution control efforts (HSC 41866).

4) The state board may adjust the district burn permit fees to pay for the preparation of the report and its updates. It shall be the goal of the state board and the department that the cost of the report and its updates shall not exceed fifty thousand dollars ($50,000) (HSC 41865(n)).

Penalties
For negligent or intentional acts, a violation of any provision of the law is a misdemeanor punishable up to a maximum fine of $10,000 or nine months imprisonment or both. For a violation of any provision of the law a civil penalty may be assessed of up to a maximum of $10,000.

Records and accounting

The means used to ensure compliance with the rice straw percentages will be through the district burn permit records and an account of the total rice acreage planted by each grower. Growers will identify which fields they will not burn to meet the minimum reductions required.

Reporting of rice straw burning to the ARB will be done pursuant to the requirements specified in the Conditional Rice Straw Burning Permit Program.

The SMPC will collect and maintain data on the number of rice acres burned, by crop year, for each air district during the fall burn season. After the conclusion of the fall burn season the SMPC will request that each district report acres of rice straw burned on a monthly basis to track burn totals throughout the winter and spring. The SMPC will report to the TAC the total rice acreage burned in the Sacramento Valley Air Basin at monthly meetings. If the total burned rice acreage reaches 100,000 acres the SMPC will request burning information from districts on a weekly basis. This will be required to ensure that the annual rice burning acreage limit of 125,000 acres (some years may have a lower annual limit) will not be exceeded.

24. ENFORCEMENT AND EDUCATION

Penalties

Existing penalties authorized in the Health and Safety Code must be utilized in enforcement actions and the adoption and use of civil penalty settlement procedures is encouraged. Enforcement penalties are stipulated in the California Health and

Safety Code, Division 26, Part 4, Chapter 3, Article 3 and Chapter 4, Article 3. Penalties will be administered according to district rules, regulations, and policies and Health and Safety Code provisions to conform to the law.

Enforcement actions

Enforcement actions must be equitably applied to all types of violations and fines must be an effective deterrent to further violations. The fines for each violation of program requirements should increase according to the severity of the violation. The following list describes in descending order of severity various types of violations:

1) Burning on a no-burn day
2) Burning rice acreage committed for phasedown reduction
3) Burning without authorization
4) Burning more than the allocated acreage
5) Burning outside the established burn hours
6) Not meeting drying criteria or crackle test
7) Using unauthorized lighting techniques

The decision that there is a violation rests with the local APCO. All involved parties may be held culpable if the APCD cannot determine who was at fault for a violation.

Consistent and proportional enforcement

The enforcement effort must be consistent with the amount of burning that is conducted within an area. At a minimum, each day, field personnel from the air pollution office, or their agents, should conduct field inspections of initial burns, and perform random inspections throughout the day, especially at the end of and after burning hours.

Enforcement reports

Each district will prepare an annual report of enforcement actions taken against violators. The report will contain information on the number and type of violations and the amount or type of penalty imposed for each violation. The report will be made available to the ARB and other interested parties upon request.

Education

On an annual basis, each grower (i.e. field, row, and orchard crops) should be contacted and educated about the burning program and the agency's enforcement plan through grower contacts, or at a minimum through a letter describing the basic elements of the program. An annual informational meeting for growers will be held each year prior to the fall burning period to review program procedures.

Compliance confirmation

Through use of the computerized grower burn list program and field observations, each agency should check phasedown status, harvest date, drying time, and completed burns. These observations are intended to confirm compliance with reporting procedures and verify that observed burning corresponds with allocations to growers.

Agricultural burning management and enforcement plans

Each agency should have a written agricultural burning management and enforcement plan describing program procedures and criminal, civil, and procedural penalties for various types of violations. This plan is intended to describe enforcement practices and promote program uniformity and burner compliance. The plan should be available to the burners in each area.

Aerial surveillance

The BCC will conduct flights for the purposes of enforcement of program procedures and for spatial and temporal management of the burning. This aids in analysis of the program changes and improves valley-wide coordination.

Whenever significant program changes are made, first notification and education of the growers should take place then stepped up enforcement should follow. The enforcement flights will be performed randomly during and after burn hours on weekdays and weekends, burn days and no-burn days.

The funding for the BCC basinwide aerial surveillance should come from the BCC budget and a percentage of the fines for any violations identified through aerial surveillance. The budget for flying will be set by the BCC.

25. APPENDICES

1) Sacramento Valley Smoke Management Plan
2) Northeast Air Alliance Smoke Management Plan
3) Conditional Rice Straw Burning Permit Program