

**SAN DIEGO AIR POLLUTION CONTROL DISTRICT**

**SMOKE MANAGEMENT PLAN**  
**APPLICATION FORM**

In accordance with the San Diego Air Pollution Control District's (District) Smoke Management Program, this Smoke Management Plan (SMP) must be completed by the applicant and submitted to the District for all Prescribed Burns in San Diego County. This SMP application consists of a Project Description page and two sections – A and B. **ALL APPLICANTS MUST COMPLETE THE PROJECT DESCRIPTION PAGE (page 1)**. Both sections A and B of the SMP are two-page forms (**pages 4 - 7**) that may need to be completed depending on the burn's potential to impact smoke sensitive areas and the size of the burn. This SMP must be approved by the District prior to the Prescribed Burn and must be combined with the District's *Permit To Burn*.

**General Information and Requirements** regarding this SMP are provided on **page ii**. Terms used in this form have the same meaning as those defined in the District's Rule 101 – Burning Control, or the California Code of Regulations, Title 17, Section 80101. Where differences occur, the District's definitions apply.

**Emission Factors** to assist with calculating burn particulate matter emissions are provided on **pages 9 and 10**. Contact the District if you have questions or need assistance with making these calculations (Contact the Meteorology and Modeling Section at 858-586-2769).

The **District Review (page 3)** is for District use only, but must be kept intact with the Project Description section. The **Project Description Page (page 1)** requests general information and identifies conditions for all prescribed burn projects. It identifies the permittee and relevant contact information, who the land owner is, the project name, project location, burn size, purpose of the burn, type of fuel to be burned, and estimated emissions from the burn. It provides a checklist of additional sections of the SMP that may be filled out and attached. Finally, it requests the preparer's signature, the name of the permittee or authorized representative, and the permittee or authorized representative's signature.

**Section A (page 4)**, is a two-page form that must be completed and attached to the Project Description page if the burn will be greater than 10 acres or will produce more than one ton of particulate matter (PM10) or has the potential to result in impacts to smoke sensitive areas. Smoke sensitive areas are defined as "populated areas and other areas where the District determines that smoke and air pollutants can adversely affect public health or welfare." Such areas can include, but are not limited to, towns and villages, campgrounds, trails, populated recreational areas, hospitals, nursing homes, schools, roads, airports, public events, shopping centers, and Class I Areas (areas that are mandatory visibility protection areas designated pursuant to section 169A of the federal Clean Air Act). The District can tell you if you are in a Class I Area.

**Section B (page 6)**, is a two-page form that must be completed and attached to the Project Description page if the burn will be greater than 100 acres or will produce more than ten tons of particulate matter (PM10). Section B identifies meteorological conditions necessary for ignition, contingency actions that will be taken if smoke impacts begin to occur from the burn, and information on consideration and use of alternatives to burning. A **Post-Burn Evaluation** form is provided on **page 8**. This form is to be used for burns greater than 250 acres or for burns that result in impacts to smoke sensitive areas. It should be filled out after the burn, as appropriate.

Information may need to be extracted from the project burn plan (if available) to supplement the SMP. District review of the burn plan is for informational purposes only. When the burn plan is reviewed, the District assumes no approval authority or liability for approving the burn plan. The permittee is responsible for assuring firefighter and public safety, which is not the intent of the information included on this form.

## **General Information and Requirements**

### **SMP Conditions Must Be Met on the Day of the Burn (CCR section 80160(j))**

The land manager or his/her designee conducting a prescribed burn is required to ensure that all conditions and requirements stated in the smoke management plan are met on the day of the burn event and prior to ignition. Ignition of a burn project will not occur unless the District has declared a permissive burn day for the day of the burn.

### **Conditions of Vegetative Material to be Burned (CCR section 80160 (m – p))**

Material should be:

- ◆ in a condition that will minimize the smoke emitted during combustion when feasible, considering fire safety and other factors
- ◆ piled where possible, unless ecological goals dictate otherwise
- ◆ prepared so that it will burn with a minimum of smoke

### **Description of Burn Types**

Forest Management Burning is the use of open fires, as part of a forest management practice, to remove forest debris or for forest management practices which include timber operations or forest protection practices.

Range Improvement Burning is the use of outdoor fires to:

- ◆ remove vegetation for wildlife or game habitat
- ◆ remove vegetation for livestock habitat
- ◆ remove vegetation for the initial establishment of an agricultural practice on previously uncultivated land

Wildland Vegetation Management Burning is the use of prescribed burning conducted by a public agency, or through a cooperative agreement with a private manager or contract involving a public agency, to burn land predominantly covered with chaparral (as defined in Title 14, California Code of Regulations, section 1561.1), trees, grass, or standing brush.

### **Determination of Smoke Sensitive Areas**

Smoke sensitive areas are defined as “populated areas and other areas where the District determines that smoke and air pollutants can adversely affect public health or welfare.” Such areas can include, but are not limited to, towns and villages, campgrounds, trails, populated recreational areas, hospitals, nursing homes, schools, roads, airports, public events, shopping centers, and Class I Areas (areas that are mandatory visibility protection areas designated pursuant to section 169A of the federal Clean Air Act). The District can tell you if your burn is in a Class I Area. If a burn is near a populated area, has potential for substantial emissions, has a long duration, or has the potential for poor smoke dispersion, a smoke sensitive area could be impacted and Section A of the SMP must be completed. Burners may obtain District assistance in determining if Section A needs to be completed (Meteorology and Modeling Section: 858-586-2769).

### **Procedures for Permittees to Report Public Smoke Complaints to Air Districts to Address Smoke Management Guidelines Section 80160(l)**

1. The permittee shall immediately report any air quality smoke complaints received about this burn project to the District. A phone call to the District during normal business hours (Monday through Friday, 7:00 AM through 5:30 PM) will suffice (858-586-2650). During non-business hours a fax (to the Compliance Division at 858-586-2651) or voicemail message (858-586-2650) will suffice.
2. The complaint report shall include the following: the location of the smoke impact, a short description of the smoke behavior including wind direction and speed, visibility, and public safety impacts if available from the complainant.
3. The permittee shall inform the complainant that he or she may also contact the District directly and shall provide the District telephone number and address. (858-586-2650, San Diego Air Pollution Control District, 10124 Old Grove Road, San Diego, CA 92131-1649).
4. The permittee shall, in coordination with the District, seek resolution for all complaints, as necessary.

### **Natural Ignition on a No-burn Day (CCR section 80160(h))**

When a natural ignition occurs on a no-burn day, the initial “go/no-go” decision to manage the fire for resource benefit will be a “no-go” unless:

1. After consultation with the District, the District decides, for smoke management purposes, that the burn can be managed for resource benefit; or
2. For periods of less than 24 hours, a reasonable effort has been made to contact the District, or if the District is not available, the Air Resources Board (ARB: 916-322-6014); or
3. After 24 hours, the District has been contacted, or if the District is not available, the ARB has been contacted and concurs that the burn can be managed for resource benefit. A “no-go” decision does not necessarily mean that the fire must be extinguished, but that the fire cannot be considered as a prescribed fire.

**SMP Project Description  
(Complete This Page for ALL PRESCRIBED BURNS)\***

<b>1.1 Project Name:</b> _____	<b>Project Location: (Report at least latitude and longitude location descriptions. Provide attachment as needed.)</b>
<b>1.2 Permittee Name:</b> _____	<b>1.8a Legal:</b> T _____ R _____ S _____ M&B _____
<b>1.3 Permittee Address:</b> Street: _____ City: _____ State: _____ Zip: _____	<b>1.8b Lat/Long:</b> Lat _____ (deg.) _____ (min) _____ (sec) Long _____ (deg.) _____ (min) _____ (sec)
<b>1.4 Permittee/Field Contact:</b>	<b>1.8c UTM: Zone:</b> _____ N _____ m, E _____ m
<b>1.5 24-hour Phone/Pager:</b>	<b>1.9 Project Elevation (msl feet):</b> Top: _____ Bottom: _____
<b>1.6 Project Location (Counties):</b>	<b>1.10 Land Owner Name:</b> _____
<b>1.7 Nearest Town:</b>	Street: _____ City: _____ State: _____ Zip: _____

**1.11** Anticipated Time of Year for Burn (Month/Year): \_\_\_\_\_

**1.12a** Is the Primary Purpose of the Burn for Fire Hazard Reduction? \_\_\_\_\_

**1.12b** Burn Type (Check one):  Forest Management  Range Improvement  Wildland Vegetation Management  
 Natural Ignition (see General Information on page ii for description of these burn types)

**1.13** For Range Improvement Burns, Check Vegetation Management Objective:  Wildlife or Game Habitat Improvement  
 Livestock Habitat Improvement  Initial Establishment of an Agricultural Practice on Previously Uncultivated Land

**1.14** Vegetation Type (Percentage): \_\_\_\_\_ Brush \_\_\_\_\_ Grass \_\_\_\_\_ Timber Litter \_\_\_\_\_ Timber Slash  
\_\_\_\_\_ Other (Describe): \_\_\_\_\_

**1.15** Vegetation Condition:  Machine Pile Burn  Hand Pile Burn  Understory  Landing Pile Burn  Broadcast

**1.16** Project Area: \_\_\_\_\_ (acres)      **1.17** Number of Piles: \_\_\_\_\_      **1.18** Average Pile Size: \_\_\_\_\_

**1.19** Total Project Fuel Loading: \_\_\_\_\_ (tons vegetation)      **1.20** Particulate Matter Emissions: \_\_\_\_\_ (tons PM10)

**(Use Emissions Factors Tables on pages 9-10 for assistance with emissions calculation)**

**1.21** Emission Factor Table Used or EPA-Approved Calculation Method: \_\_\_\_\_

**1.22** Preferred Ignition Hours for the Fire: \_\_\_\_\_

**1.23** Expected Burn Duration (ignition to complete extinction): Total Time: \_\_\_\_\_ (hours or days)

**1.24** Fuel Drying Time and Conditions prior to ignition: \_\_\_\_\_

**1.25** Limitations on Pile Size, Pile Number, and/or Acreage Limitations to Minimize Smoke (complete as appropriate):  
\_\_\_\_\_

It is the responsibility of the permittee to ensure that conditions of the SMP are met on the day of the burn. The permittee will obtain authorization to burn from the District contact listed below prior to ignition.\*\*

<b>1.26 District Name:</b> San Diego Air Pollution Control District	<b>1.28 Contact:</b> Meteorology and Modeling Section
<b>1.27 Address:</b> 10124 Old Grove Road	<b>1.29 Weekday Telephone:</b> 858-586-2769
San Diego, CA 92131-1649	<b>1.30 Fax:</b> 858-586-2759
	<b>1.31 Email:</b> <a href="mailto:apcdwx@sdcounty.ca.gov">apcdwx@sdcounty.ca.gov</a> (initial contact only)

The permittee will report public smoke complaints to the District per the procedures described in the General Information section of this application.

**Check as Applicable:**

- This burn could have an impact on smoke sensitive areas – I have filled out and attached all of Section A on pages 4 and 5.
- This burn is greater than 10 acres (or is estimated to produce greater than 1 ton of particulate matter (PM10)) or could have an impact on smoke sensitive areas and Air District policies require that information on meteorological conditions for ignition and contingency planning be provided – I have filled out and attached line items B.1 and B.2 of Section B on page 6.
- This burn is greater than 100 acres (or is estimated to produce greater than 10 tons of particulate matter (PM10) – I have filled out and attached all of Section B on pages 6 and 7.

**Preparer’s Statement:** To the best of my knowledge the information submitted in this application is complete and accurate.

SMP Preparation Date: \_\_\_\_\_

Preparer’s Name (print): \_\_\_\_\_ Title: \_\_\_\_\_

Preparer’s Phone: (\_\_\_\_) \_\_\_\_\_

Preparer’s Signature: \_\_\_\_\_

Name of Authorized Representative in Control of the Property (if applicable): \_\_\_\_\_

Permittee or Authorized Representative Signature: \_\_\_\_\_

Signature Date: \_\_\_\_\_

\* If your burn is less than 10 acres with less than one-ton particulate matter emissions, and your burn will not impact any smoke sensitive areas, you may complete only this page. Attach appropriate SMP sections for all other burns.

\*\* Burner/District burn authorization coordination to be determined by the District.

**DISTRICT REVIEW**  
**(For District Use Only)**

\_\_\_ I have reviewed and approved this SMP as a conditional burn permit to be combined with agricultural burn/air pollution permit number \_\_\_\_\_, which expires on \_\_\_\_\_.

\_\_\_ This burn project is greater than 250 acres and/or is a multi-day burn which requires ARB consultation prior to final approval pursuant to CCR 80160(g)).

Date ARB Notified: \_\_\_\_\_ Date ARB approval received: \_\_\_\_\_

Smoke from this fire is expected to travel into the following non-attainment or maintenance areas:

\_\_\_\_\_  
\_\_\_\_\_

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Agency : San Diego Air Pollution Control District

Date: \_\_\_\_\_

**SECTION A: AS REQUIRED BY TITLE 17 AND DISTRICT RULES, THIS SECTION APPLIES TO ALL BURN PROJECTS GREATER THAN 10 ACRES OR PRODUCING MORE THAN 1 TON OF PARTICULATE MATTER (PM10) OR WITH BURNS WITH THE POTENTIAL TO IMPACT SMOKE SENSITIVE AREAS (SSAs) \***

**A.1** Describe locations of SSAs and distances from burn site (miles) – (Also the attached Map# \_\_\_\_\_ shows SSAs)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**A.2** The attached map# \_\_\_\_\_ provides smoke travel projections for:  Day  Night  Topographical

**A.3** Has prescribed burning historically occurred in this area?  Yes  No  Don't Know

**A.4** If yes, were there impacts to smoke sensitive areas?  Yes  No  Don't Know

**A.5** If yes, please describe impacts: \_\_\_\_\_

**A.6** For burns that will occur past daylight hours and/or for more than one day, provide the District contact information and a description of contact procedures that will be used to affirm that the burn project remains within the conditions specified in this SMP, and/or whether contingency actions are necessary. The permittee will follow any instructions by the District to communicate directly with ARB when necessary (916-322-6014). District contact: Meteorology and Modeling Section (858-586-2769).

**A.7** Permittee Contact (or designee): \_\_\_\_\_

**A.7a** Telephone: (\_\_\_\_\_) \_\_\_\_\_ **A.7b** 24-hour Pager (\_\_\_\_\_) \_\_\_\_\_

**A.7c** Fax: (\_\_\_\_\_) \_\_\_\_\_ **A.7d** E-mail: \_\_\_\_\_

**A.8** The permittee will use the frequency and method of contact determined by the District for this burn:

\_\_\_\_\_

\_\_\_\_\_

The permittee will monitor the burn project for meteorological conditions and smoke behavior before, during, and after the burn using the following techniques and timing:

**A.9 Weather Observation (Wind Direction, Wind Speed, and Temperature):**

Method	Location	Beginning	Interval	Ending
<input type="checkbox"/> Weather Kit	_____	_____	_____	_____
<input type="checkbox"/> RAWS	_____	_____	_____	_____
<input type="checkbox"/> Aircraft	_____	_____	_____	_____
<input type="checkbox"/> Other _____	_____	_____	_____	_____

(Additional Description of Monitoring Requirements): \_\_\_\_\_

\_\_\_\_\_

**A.10 Smoke Behavior Observation:**

Method	Location	Beginning	Interval	Ending
<input type="checkbox"/> Visual**	_____	_____	_____	_____
<input type="checkbox"/> Test Fire	_____	_____	_____	_____
<input type="checkbox"/> Balloon	_____	_____	_____	_____
<input type="checkbox"/> Aircraft	_____	_____	_____	_____
<input type="checkbox"/> PM Monitoring Inst.	_____	_____	_____	_____

**A.10 Smoke Behavior Observation:** continued

<u>Method</u>	<u>Location</u>	<u>Beginning</u>	<u>Interval</u>	<u>Ending</u>
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Other \_\_\_\_\_

(Additional Description of Monitoring Requirements): \_\_\_\_\_

**A.11a** The permittee shall begin public notification before the day of burning. The notification shall be on-going until the end of burning. Check which of the following procedures will be used to notify and educate the public about this burn project.

Television  Radio  Newspaper  Posters/flyers  Telephone calls  Other (Explain in A.11b below)

**A.11b** The specifics of the notification procedure(s) checked above are as follows: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**A.12** The permittee will place appropriate signage at or near burn sites to identify the burn project to the public as noted on the attached map# \_\_\_\_\_

Adjacent air districts or portions of Mexico that may be potentially impacted by smoke from this burn or which have previously been impacted by smoke from similar burn projects are listed below. The District will be responsible for contacting the agencies listed below.

**A.13** Air District Name: \_\_\_\_\_ **A.14** Contact: \_\_\_\_\_

**A.15** Address: \_\_\_\_\_

**A.16** 24-hour Telephone: (\_\_\_\_\_) \_\_\_\_\_ **A.17** Fax: (\_\_\_\_\_) \_\_\_\_\_

**A.18** Air District Name: \_\_\_\_\_ **A.19** Contact: \_\_\_\_\_

**A.20** Address: \_\_\_\_\_

**A.21** 24-hour Telephone: (\_\_\_\_\_) \_\_\_\_\_ **A.22** Fax: (\_\_\_\_\_) \_\_\_\_\_

**A.23** Name of Appropriate Agency in Mexico: \_\_\_\_\_

**A.24** Contact: \_\_\_\_\_ **A.25** Address: \_\_\_\_\_

**A.26** 24-hour Telephone: (\_\_\_\_\_) \_\_\_\_\_ **A.27** Fax: (\_\_\_\_\_) \_\_\_\_\_

\* See General Information on page ii for determining if your burn has the potential to impact a smoke sensitive area. For Prescribed Burns of more than 10 acres (or 1 ton of PM10) or which can impact SSA's, complete line items B.1 and B.2 of Section B on page 6.

\*\* Visual smoke observation refers to observations made through the eyes of designated individuals.

**SECTION B: AS REQUIRED BY TITLE 17 AND DISTRICT RULES, THIS SECTION APPLIES TO ALL BURN PROJECTS GREATER THAN 100 ACRES OR PRODUCING MORE THAN 10 TONS OF PARTICULATE MATTER (PM10)**

**B.1** Meteorological Conditions for Ignition

Source of Meteorological Information: \_\_\_\_\_

Surface Wind Direction: Ideal: \_\_\_\_\_ Acceptable Range: \_\_\_\_\_ (degrees)

Surface Wind Speed: Ideal: \_\_\_\_\_ Maximum: \_\_\_\_\_ Minimum: \_\_\_\_\_ (mph)

Transport Wind Direction: Ideal: \_\_\_\_\_ Acceptable Range: \_\_\_\_\_ (degrees)

Relative Humidity: Ideal: \_\_\_\_\_ Maximum: \_\_\_\_\_ Minimum: \_\_\_\_\_ (%)

Target Mixing Height Parameters: Acceptable Temperature Range: \_\_\_\_\_ (degrees)

Other Considerations to Assure Acceptable Smoke Dispersion: \_\_\_\_\_

**B.2a** Describe contingency actions/methods/procedures permittee will take in the event that serious smoke impacts begin to occur or meteorological conditions deviate from those specified in this SMP (for example: stop ignitions, initiate mop-up, conduct fire suppression – describe in detail):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**B.2b** Describe any applicable interior unit contingency cutoff lines (refer to map# \_\_\_\_\_ as appropriate):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**B.3** An evaluation of alternatives to burning is described below:

- It is a part of the environmental documentation required for the burn project pursuant to the National Environmental Policy Act or the California Environmental Quality Act and is either attached to this SMP, is on file with the District, or is provided for as agreed to by the District.

Document location: \_\_\_\_\_

- Neither a National Environmental Policy Act or the California Environmental Quality Act assessment of alternatives has been performed. Alternatives to reduce fuel load are described in section B.4 – B.9 below.

**B.4** Alternatives Considered: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**B.5** Alternatives Rejected and Reasons for Rejection: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**B.6** Alternatives Used and Tons of Vegetative Material Treated Using Each Alternative:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**B.7** Particulate Reduction for Each Alternative Used (tons): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**B.8** Total Particulate Reductions from Alternatives: \_\_\_\_\_

**B.9** The Following Alternatives to Burning were Considered, But Will Not Be Used:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**B.10** If this project is greater than 250 acres or smoke impacts occur, the permittee must provide a completed Post Burn Evaluation Form (see page 8) to the District within 30 days of project completion.

**B.11** For burns greater than 250 acres, Sections A.9 and A.10 describe the site monitoring requirements.

**Post-Burn Evaluation  
For Burns Greater Than 250 Acres  
or Burns For Which Complaints or Smoke Impacts Occurred\***

**Section A. General Information:**

Date of Burn: \_\_\_\_\_ Burn Location: \_\_\_\_\_

Number of Acres Burned: \_\_\_\_\_ Estimated Actual PM Emissions: \_\_\_\_\_ (tons)

Land Manager's Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone Number: \_\_\_\_\_

E-mail: \_\_\_\_\_

1. Did the burn remain within the conditions specified in the Smoke Management Plan?  Yes  No
2. Were there any complaints or adverse smoke impacts?  Yes  No If so, proceed to Section B below.
3. Lessons learned (Optional) (Provide attachment if desired): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Section B. For Burns That Had Complaints or Smoke Impacts, Complete The Following:**

1. Describe adverse smoke impacts below (add attachment if needed):  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
2. Were there any complaints from the public?  Yes  No If so, how many and from whom (add attachment if needed):  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
3. What Air Districts were Notified (who, when, and at what phone number(s))?  
 \_\_\_\_\_  
 \_\_\_\_\_
4. Lessons learned (add attachment if needed): \_\_\_\_\_  
 \_\_\_\_\_
5. Attach all smoke observation and weather data collected before, during, and after the burn. See collection methods checked in sections A.9 and A.10 of the burn plan for relevant data.

**\*As required by Title 17 and District Rule 101.**

**Table 1  
PM-10 EMISSIONS CALCULATIONS FOR PILES**

- Choose the pile size most representative of the piles on your burn site.
- Multiply the number of piles in your project with the corresponding "Tons of PM10/Pile" value to get the total PM-10 tonnage.

PM10 EMISSIONS FOR SPECIFIED PILE SIZES		
PILE SIZE (in feet)	Pile Tonnage	TONS OF PM10/PILE
4' diameter x 3' height	0.056	0.0005
5' diameter x 4' height	0.12	0.001
6' diameter x 5' height	0.21	0.002
8' diameter x 6' height	0.45	0.004
10' diameter x 6' height	0.71	0.007
12' diameter x 8' height	1.3	0.01
15' diameter x 8' height	2.1	0.02
20' diameter x 10' height	4.7	0.04
25' diameter x 10' height	7.4	0.07
50' diameter x 10' height	29	0.3

Pile Tonnage calculated using paraboloid volume formula<sup>a</sup> multiplied by 30 lbs/cu.ft, multiplied by 0.2 packing ratio<sup>b</sup>

U.S. Forest Service's Conformity Handbook, Table 6 -- PM10 Emissions Factor of 19.0 pounds/ton of fuel burned - average pile and burn slash

Revised 2/13/2001

- Formula used for Paraboloid Volume (cu.ft.) =  $3.1416 \times [\text{height} \times (\text{diameter})^2] / 8$  (see Reference b. below).
- USDA (2/1996). Forest Service General Technical Report. Report Number: PNW-GTR-364.

**Table 2  
PM 10 EMISSION CALCULATION FOR BURNING OF MULTIPLE FUEL TYPES<sup>1,2</sup>**

Section 80160 (b) of Subchapter 2 Smoke Management Guidelines for Agricultural and Prescribed Burning, Title 17, California Administrative Code states, "requires the submittal of smoke management plans for all burn projects greater than 10 acres in size or estimated to produce more than 1 ton of particulate matter". To determine what the particulate matter (PM 10) amount is of your burn project please use the equation below and review the following examples.

**Information needed for PM 10 Calculations:**

- VT = Vegetation type
- ACRES VT = Estimated number of acres for VT
- FL est. = Estimated fuel loading in VT TONS per ACRE
- EV = PM10 emission/ton of fuel

Calculating PM10 Emissions from Prescribed Burning of multiple vegetation types:

$$\begin{aligned} \text{PM10 ton(s) emissions per VT} &= (\text{number of acres VT}) (\text{FL tons per acre}) (\text{Emission Value (EV)}) = \text{_____ ton(s)/VT} \\ \text{PM10 ton(s) emissions per VT} &= (\text{number of acres VT}) (\text{FL tons per acre}) (\text{Emission Value (EV)}) = \text{_____ ton(s)/VT} \\ \text{Sum Total is the Estimated PM 10 for the project} &= \text{_____ ton(s)/project} \end{aligned}$$

VEGETATION TYPE(S)	ACRES (VT)	x	FL est.	x	EV <sup>1</sup>	PM10 EMISSIONS (ton(s))
Basing Sage/Low Sage	( )	x	( )	x	(0.010) =	_____
Ceanothus	( )	x	( )	x	(0.010) =	_____
Chamise	( )	x	( )	x	(0.009) =	_____
Giant Sequoia	( )	x	( )	x	(0.007) =	_____
Grass/Forb	( )	x	( )	x	(0.007) =	_____
Hackberry Oak	( )	x	( )	x	(0.005) =	_____
Hardwood (Stocked)	( )	x	( )	x	(0.003) =	_____
Hardwood (Non-stocked)	( )	x	( )	x	(0.003) =	_____
Jeffrey Pine/Knobcone	( )	x	( )	x	(0.007) =	_____
Live Oak (Canyon)	( )	x	( )	x	(0.007) =	_____
Live Oak (Interior)	( )	x	( )	x	(0.007) =	_____
Lodgepole Pine	( )	x	( )	x	(0.007) =	_____
Manzanita (Productive Brush)	( )	x	( )	x	(0.009) =	_____
Mixed Chaparral/Montane	( )	x	( )	x	(0.008) =	_____
Mixed Conifer	( )	x	( )	x	(0.006) =	_____
Oak (Black)	( )	x	( )	x	(0.005) =	_____
Oak (Blue)	( )	x	( )	x	(0.003) =	_____
Oak (White)	( )	x	( )	x	(0.003) =	_____
Pinyon Pine	( )	x	( )	x	(0.007) =	_____
Ponderosa Pine, Gray Pine	( )	x	( )	x	(0.007) =	_____
Red Fir	( )	x	( )	x	(0.007) =	_____
Wet Meadow	( )	x	( )	x	(0.004) =	_____
Willow	( )	x	( )	x	(0.007) =	_____
<b>Sum Total of the Estimated PM10 for the project in tons/project</b>						<b>= _____</b>

1. See Table 3 on next page for values used to calculate EVs.

2. *For vegetation types not listed, contact Air District for assistance with determining appropriate emission factors.*

**Table 3**  
**EMISSION VALUES (EV) FOR PRESCRIBED BURNS OF VARIOUS VEGETATION TYPES\***

Estimated PM10 emission values for various vegetation types = (% combustion) x (PM10 emission lbs/ton) x (1 ton/2000 lbs)\*

VEGETATION	%Combustion		PM Emissions (lbs/ton fuel)		Coverision Factor	PM10 EMISSION VALUE (PM10 ton emissions/ton fuel)
Basing Sage/Low Sage	= (1.0)	x	(20.17 lbs/ton)	x	(1 ton/2000 lbs)	= 0.010
Ceanothus	= (1.0)	x	(20.17 lbs/ton)	x	(1 ton/2000 lbs)	= 0.010
Chamise	= (0.9)	x	(20.17 lbs/ton)	x	(1 ton/2000 lbs)	= 0.009
Giant Sequoia	= (0.6)	x	(25 lbs/ton)	x	(1 ton/2000 lbs)	= 0.007
Grass/Forb	= (1.0)	x	(15 lbs/ton)	x	(1 ton/2000 lbs)	= 0.007
Hackberry Oak	= (0.4)	x	(25 lbs/ton)	x	(1 ton/2000 lbs)	= 0.005
Hardwood (Stocked)	= (0.4)	x	(15 lbs/ton)	x	(1 ton/2000 lbs)	= 0.003
Hardwood (Non-stocked)	= (0.4)	x	(15 lbs/ton)	x	(1 ton/2000 lbs)	= 0.003
Jeffrey Pine/Knobcone	= (0.6)	x	(25 lbs/ton)	x	(1 ton/2000 lbs)	= 0.007
Live Oak (Canyon)	= (0.6)	x	(25 lbs/ton)	x	(1 ton/2000 lbs)	= 0.007
Live Oak (Interior)	= (0.6)	x	(25 lbs/ton)	x	(1 ton/2000 lbs)	= 0.007
Lodgepole Pine	= (0.6)	x	(25 lbs/ton)	x	(1 ton/2000 lbs)	= 0.007
Manzanita (Productive Brush)	= (0.9)	x	(20.17 lbs/ton)	x	(1 ton/2000 lbs)	= 0.009
Mixed Chaparral/Montane	= (0.8)	x	(20.17 lbs/ton)	x	(1 ton/2000 lbs)	= 0.008
Mixed Conifer	= (0.6)	x	(20.5 lbs/ton)	x	(1 ton/2000 lbs)	= 0.006
Oak (Black)	= (0.4)	x	(25 lbs/ton)	x	(1 ton/2000 lbs)	= 0.005
Oak (Blue)	= (0.4)	x	(15 lbs/ton)	x	(1 ton/2000 lbs)	= 0.003
Oak (White)	= (0.4)	x	(15 lbs/ton)	x	(1 ton/2000 lbs)	= 0.003
Pinyon Pine	= (0.6)	x	(22 lbs/ton)	x	(1 ton/2000 lbs)	= 0.007
Ponderosa Pine, Gray Pine	= (0.6)	x	(25 lbs/ton)	x	(1 ton/2000 lbs)	= 0.007
Red Fir	= (0.6)	x	(23.1 lbs/ton)	x	(1 ton/2000 lbs)	= 0.007
Wet Meadow	= (0.6)	x	(15 lbs/ton)	x	(1 ton/2000 lbs)	= 0.004
Willow	= (0.6)	x	(25 lbs/ton)	x	(1 ton/2000 lbs)	= 0.007

\* Percent combustion and PM10 emission factors for various fuel types derived from Table 8, Section 6, "Air Quality Conformity Handbook" from the USDA-Forest Service Air Resources / Fire Management Pacific Southwest Region dated November 1995.

\*\* These are the vegetation's estimated emissions values (EV) from the vegetation type as determined above to be use when the burn operator provides the vegetation's fuel loading estimate per acre.

\*\*\* For additional information on emissions factors, see EPA document AP-42: "Compilation of Air Pollutant Emission Factors. Volume 1: Stationary Point and Area Sources," Fifth Edition, AP-42, January 1995, U.S. EPA. Table 2.5-5.