

Wyoming Smoke Management Program Guidance Document

**Wyoming Department of Environmental Quality
Air Quality Division**

*To provide guidance on the implementation of
Wyoming Air Quality Standards and Regulations Chapter 10, Section 4
and its relationship to Chapter 10, Section 2.*

November 2004

EXECUTIVE SUMMARY

In 2004, the State of Wyoming revised the Wyoming Air Quality Standards & Regulations Chapter 10, and developed a new Section 4, Smoke management requirements. The new Chapter 10, Section 4 regulates large-scale vegetative burning, specifically vegetative burns in excess of 0.25 tons of PM₁₀ emissions per day, for the management of air quality emissions and impacts from smoke on public health and visibility. The changes to Chapter 10 were adopted by the Environmental Quality Council on April 13, 2004, and were filed by the Secretary of State and became effective on May 14, 2004. The specific smoke management requirements within Chapter 10, Section 4 have an implementation date of January 1, 2005.

In support of Chapter 10, Section 4, the Wyoming Department of Environmental Quality – Air Quality Division (WDEQ-AQD) developed this Smoke Management Program Guidance Document to assist burners in the implementation of the regulation. The Guidance Document is a review and explanation of the regulation’s requirements, as well as a guide to implementation of the regulation, written in plain English. This Guidance Document does not replace applicable laws, but is intended for use solely as a guide to implementation of the regulation and does not represent WDEQ-AQD final action or rulemaking.

The Guidance Document is structured in two major components: first is an overview of the smoke management regulation, its background and applicability, as well as the regulation’s required elements and specific requirements. Second, is the Forms and Instructions section, which provides all the forms necessary to comply with the regulation, including line-by-line instructions for filling them out, as well as other resource material to assist burners. Included in this Executive Summary is a simple, one-page table summarizing all requirements of the smoke management regulation, followed by checklists of the requirements specific to SMP-I and SMP-II levels and to Unplanned Fire. These checklists provide quick reference for users of the Smoke Management Program.

The Guidance Document represents some 90 pages of comprehensive resource material designed for the wide variety of individuals and entities involved with vegetative material burning in the State of Wyoming. As such, the Guidance Document serves as the basis of the WDEQ-AQD outreach effort across the state to garner full participation and compliance with Chapter 10, Section 4, Smoke management requirements, and to assist in further educating burners about air quality impacts from smoke and how to manage burning so as to minimize those impacts. All burners are encouraged to read the Guidance Document to enhance their understanding of the protection of air quality through smoke management and then to utilize the document as an ongoing resource.

Wyoming’s Smoke Management Program was developed through a facilitated, multi-level stakeholder process. This process involved representatives from federal, state, tribal and local land management and/or other agencies, agriculture, private landowners, environmental groups and other interested parties. The intent of this process was to create a regulation and smoke management program (SMP) that is equitable, enforceable, and simple; is based on the best available science; and that fits the needs specific to the State of Wyoming.

In considering the diversity and capability of burners, the SMP needs to address the range of different types of burning in language understandable to all burners. For this reason, the SMP and Chapter 10, Section 4 are written using landownership-neutral language. The Glossary includes ownership-specific synonyms specified in the appropriate definitions to assist all burners using the SMP. The WDEQ-AQD will also endeavor to utilize a range of technological formats to administrate the SMP so as to further accommodate the variety of burners.

The Wyoming Smoke Management Program is dynamic, and will be evaluated on an annual basis and revised as necessary, involving stakeholder review and public input. Likewise, the WDEQ-AQD may periodically revise and update this Guidance Document.

ELEMENTS	SMP REQUIREMENTS		
	PLANNED BURN PROJECTS		UNPLANNED FIRE
	SMP-I	SMP-II	
Applicability	Burner	Burner	Jurisdictional Fire Authority*
	> 0.25 tons/day PM ₁₀ AND < 2 tons/day PM ₁₀	≥ 2 tons/day PM ₁₀	> 50 acres
Registration	Voluntary	Jan 31, but no later than 2 weeks prior	Not Applicable
Notification	Prior to ignition (1 hour prior)	Prior to ignition (10 a.m. on the business day prior)	Not Applicable
	Not Applicable	Not to exceed daily maximum notified amount	Not Applicable
	Not Applicable	Subject to modification	Subject to modification -- Managed only
Post Burn Reporting	6 weeks after completion	6 weeks after completion	By December 31
Smoke Management Education	Voluntary	Required prior to ignition	Required -- Managed only
Public Information	Jurisdictional fire authority(ies)	Jurisdictional fire authority(ies)	Jurisdictional fire authority(ies)
	Populations within 0.5 mile unless low population density	Populations within 10 miles	Populations within 10 miles
Alternatives to Burning	Voluntary	Consider and document	Not Applicable
Emission Reduction Techniques	Voluntary	Implement one minimum, Waiver option	Not Applicable
Evaluation of Smoke Dispersion	Daytime hours, slight breeze, no population within 0.5 mile downwind, Waiver option	Ventilation category: "good" or better OR "fair" and no population within 10 miles downwind, Waiver option	Not Applicable
Air Quality Monitoring	Attend and observe periodically	Visual: Conduct and document	Visual: Conduct and document
	Voluntary	Instrument: Case-by-case when Populations and Nonattainment Areas within 10 miles downwind AND Class I Areas within 30 miles downwind	Instrument: Case-by-case when Populations and Nonattainment Areas within 10 miles downwind AND Class I Areas within 30 miles downwind
Long-Term Planning	Total Planned Burn Projects > 100 tons/year PM ₁₀		Not Applicable
	Report by January 31 every 3 rd year starting in 2005 (2005, 2008, ...): Burn estimates for next three years AND Alternatives to burning: Considered and utilized during previous three years AND Planned for next three years		Not Applicable

*Volunteer fire organizations' only requirement is Post Burn Reporting

SMP-I Requirement Checklist

(> 0.25 tons/day PM₁₀ AND < 2 tons/day PM₁₀)

Prior to igniting:	<input type="checkbox"/> Verify your SMP level <input type="checkbox"/> Notify the WDEQ-AQD <input type="checkbox"/> Obtain smoke dispersion Waiver (if necessary) <input type="checkbox"/> Notify the Jurisdictional Fire Authority(ies) <input type="checkbox"/> Notify Population(s) within 0.5 mile of the burn, unless area of low population density (average of 1 dwelling unit per 10 acres)
While conducting:	<input type="checkbox"/> Attend and observe periodically <input type="checkbox"/> Burn during daytime hours when there is a slight breeze and there is no population within 0.5 mile downwind
After completion:	<input type="checkbox"/> Within 6 weeks, submit a completed post burn reporting form
Other:	<input type="checkbox"/> If the total planned burn projects total >100 tons/year PM ₁₀ , submit long-term planning form

SMP-II Requirement Checklist

(≥ 2 tons/day PM₁₀)

Prior to igniting:	<input type="checkbox"/> Verify your SMP level <input type="checkbox"/> Review Smoke Management Educational Materials <input type="checkbox"/> Submit SMP-II Registration Form to WDEQ-AQD <input type="checkbox"/> Notify the WDEQ-AQD <input type="checkbox"/> Obtain emission reduction technique Waiver (if necessary) <input type="checkbox"/> Obtain smoke dispersion Waiver (if necessary) <input type="checkbox"/> Notify the Jurisdictional Fire Authority(ies) <input type="checkbox"/> Notify Population(s) within 10 miles of the burn <input type="checkbox"/> If required by WDEQ-AQD, modify the planned burn project
While conducting:	<input type="checkbox"/> Do not exceed the maximum daily burn area or daily pile volume <input type="checkbox"/> Burn when ventilation category is “Good” or better OR “Fair” with no population within 10 miles downwind <input type="checkbox"/> Utilize at least one emission reduction technique <input type="checkbox"/> Conduct and document visual monitoring <input type="checkbox"/> If required by WDEQ-AQD, conduct and document ambient air quality and/or visibility monitoring <input type="checkbox"/> If required by WDEQ-AQD, modify the planned burn project
After completion:	<input type="checkbox"/> Within 6 weeks, submit a completed post burn reporting form
Other:	<input type="checkbox"/> If the total planned burn projects total >100 tons/year PM ₁₀ , submit long-term planning form

Unplanned Fire Event Requirement Checklist
 (> 50 acres)

Prior to managing:	<input type="checkbox"/> Review Smoke Management Educational Materials
When event (suppressed or managed) exceeds 50 acres:	<input type="checkbox"/> Notify the Jurisdictional Fire Authority(ies) <input type="checkbox"/> Notify Population(s) within 10 miles of the burn <input type="checkbox"/> Conduct and document visual monitoring <input type="checkbox"/> If required by WDEQ-AQD, conduct and document ambient air quality and/or visibility monitoring <input type="checkbox"/> If required by WDEQ-AQD, modify the unplanned fire event under management
After event (suppressed or managed) cessation:	<input type="checkbox"/> By December 31, submit a completed post burn reporting form

Note: Volunteer fire organizations' only requirement is the submittal of the post burn reporting form.

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WYOMING SMOKE MANAGEMENT PROGRAM

1. Introduction

The Wyoming Department of Environmental Quality – Air Quality Division (WDEQ-AQD) has developed a Smoke Management Program (SMP) and the accompanying regulation, Wyoming Air Quality Standards and Regulations (WAQSR) Chapter 10, Section 4, Smoke management requirements to address emissions from all sources of vegetative material burning. Smoke from burning vegetation produces air pollutants that are regulated by both the U.S. Environmental Protection Agency (EPA) and the State of Wyoming because of their effects on public health. In addition to public health, fire emissions also contribute to visibility impairment, which is included in the protections under the Clean Air Act.

Smoke management programs outline a variety of practices and techniques to minimize and/or reduce smoke emissions or impacts from fire for the purpose of protecting the health and welfare of the public. WAQSR Chapter 10, Section 4 provides the enforcement mechanism for Wyoming's Smoke Management Program, and it succinctly lists the specific requirements of burners under a range of circumstances. The requirements of Chapter 10, Section 4 are effective for planned burn projects conducted and unplanned fire events that occur on or after January 1, 2005.

The WDEQ-AQD recognizes the natural role of fire in the ecosystem as well as its use as a land management tool. The forests, rangelands and grasslands of Wyoming are fire-adapted ecosystems where the long absence of fire has led to hazardous fuel and unhealthy ecological conditions. In order to return ecosystems to their natural condition, there is an increased need to use prescribed fire as a tool. Fire is also an important tool for management of agricultural crops, and is used in agriculture for weed abatement, residue disposal, pest management, and for other management purposes. Implementation of this SMP will assist in ensuring that ambient air quality standards are met in the face of increasing fire use on both public and private lands, and will allow fire to function, as nearly as possible, in its natural role in maintaining healthy ecosystems.

The purpose of the SMP is to minimize emissions from fire to the maximum extent feasible through a cooperative effort between the burner and the regulator. The SMP does not address safety issues related to fire, as that is the responsibility of other authorities. Nor is it about restricting the use of fire, but rather requiring the consideration of air quality protection as part of the burning process.

The intent of the SMP is to provide an equitable and workable program for all burners that captures the majority of situations, is simple to implement, and is the least burdensome possible. To that end, the regulation is a permit-by-rule. A permit-by-rule regulation specifies the circumstances under which a burn project is approved and if the burner complies with these circumstances, the permit is thereby assumed. Further, it eliminates much of the administrative effort on both the part of the burner and the regulator that is involved in a permit-based regulation, which requires the burner to submit substantial information prior to each planned burn project that then the regulator must review in order to grant a permit.

The focus of the SMP is the majority of situations, rather than extreme and/or isolated circumstances. Sometimes this approach will be unfair to one group and sometimes to another, or sometimes overprotective and sometimes under protective. There is a tradeoff between perfect equity on the one hand and simplicity and ease of application on the other hand. Therefore, when the SMP is implemented, if a burner of vegetative material is in doubt about something in the SMP s/he is encouraged to contact the WDEQ-AQD for clarification, and if warranted, revisions to the SMP can be considered as part of the annual program evaluation process.

2. Background

The federal Clean Air Act established the National Ambient Air Quality Standards to protect public health. Currently the EPA has established national standards for six pollutants: Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO₂), Ozone (O₃), Particulate Matter (PM₁₀ and PM_{2.5}), and Sulfur Dioxide (SO₂). A geographic area in which the level of a criteria air pollutant is higher than the level allowed by the federal standards is designated a Nonattainment area.

In July 1999, the EPA issued the Regional Haze Rule to improve visibility in 156 national parks and wilderness areas across the country. The Regional Haze Rule outlines the requirements for states and tribes to address regional haze in these mandatory federal Class I areas. States demonstrate compliance with the ambient air quality standards and with the requirements of the Regional Haze Rule through a State Implementation Plan. Class I areas, for the purposes of the Wyoming SMP and Chapter 10, Section 4, include all mandatory Class I federal areas and the Savage Run Wilderness Area, a state Class I area. Wyoming's mandatory federal Class I areas are Grand Teton and Yellowstone National Parks, and the Bridger, Fitzpatrick, North Absaroka, Teton, and Washakie Wilderness Areas.

To address regional haze concerns, this SMP proposes coordination between the State of Wyoming and the adjacent states of Colorado, Idaho, Montana, Nebraska, South Dakota and Utah as well as the adjacent Shoshone and Arapaho Tribes and Crow Tribe.

The Wyoming Department of Environmental Quality is given the authority to protect public health and welfare by the Wyoming Legislature through the Wyoming Environmental Quality Act. Under this act, the Wyoming Legislature has declared the prevention, reduction and elimination of air pollution, and Wyoming's control over its air as two express purposes of the Wyoming Department of Environmental Quality, under its Air Quality Division. Fire emissions are a known contributor to air quality impacts, and the WDEQ-AQD is the central smoke management authority for Wyoming in the reduction and mitigation of these impacts.

3. Scope and Applicability

Wyoming's SMP applies to wildland, rangeland, and agricultural lands regardless of ownership (i.e., federal, state, municipal, county, public, private), purpose of the fire (e.g., vegetative residue disposal, hazard reduction, maintain ecosystem health, etc.), or vegetation type (e.g., grass, shrubs, forest, crops, etc.). WAQSR Chapter 10, Section 4 establishes restrictions and

requirements related to the management of the emissions from vegetative material burning that exceeds a certain amount. This SMP proposes coordination between the State of Wyoming and adjacent tribes to address regional haze concerns, but does not regulate smoke management on tribal lands.

The SMP does not apply to open burning of vegetative material on residential, commercial, or industrial property that falls below a specific amount. These burning activities are regulated under WAQSR Chapter 10, Section 2, Open burning restrictions. Chapter 10, Section 2 establishes restrictions and requirements on specific burning practices, including refuse burning; vegetative material open burning; and open burning of trade wastes, for salvage operations, for fire hazards, and for fire fighting training. Therefore, burners of vegetative material will fall either under Chapter 10, Section 2 or under Chapter 10, Section 4 and the SMP.

Burners must comply with all rules and regulations of the WDEQ-AQD and with the Wyoming Environmental Quality Act. Burners must also comply with all local (city and county), state and federal laws, regulations and ordinances relating to smoke management and vegetative material burning. In addition, burners must comply with any restriction on burning issued by the city, county or state.

4. SMP Structure and Thresholds

4.1. Planned and Unplanned Fire

To equitably address emissions produced by a diverse range of burners with differing resource capability, the SMP uses a multi-tiered structure. The SMP distinguishes between planned burn projects (e.g., fire intentionally used to promote a specific management objective such as removal of crop residue or ecosystem restoration) and unplanned fire events (e.g., lightning strikes, fire ignited by downed power lines, arson, etc.). This distinction is made in this SMP to recognize that a planned fire yields greater opportunity for smoke management than an unplanned fire event. Therefore, the smoke management requirements for planned fire will be greater than for unplanned fire.¹

In making the distinction between planned and unplanned fire events, the WDEQ-AQD recognizes that the responsible party for these types of fire will also be different. For planned fire events, the responsible party is the burner, which generically refers to the individual, agency, organization, land manager or landowner who is responsible for conducting a planned burn project. For unplanned fire events, the party responsible for compliance is the jurisdictional fire authority that is responsible for the unplanned fire event (responsible jurisdictional fire authority), as there is no burner in these situations.

¹ Any techniques using fire that are part of unplanned fire suppression efforts (e.g., a backing fire) will not be considered a separate planned burn project subject to the SMP, but rather part of the overall suppression strategy.

Some requirements for responsible jurisdictional fire authorities differ slightly from those for burners so as to accommodate existing processes utilized by jurisdictional fire authorities that are sufficient in meeting some requirements. Also, where the responsible jurisdictional fire authority is a volunteer organization, special consideration is made due to the volunteer fire organization's capability to comply, which is limited by the overriding concerns of public and fire fighter safety.²

Unplanned fire events fall into two categories: those that are under active suppression and those that are being managed to accomplish specific pre-stated management objectives in a pre-defined geographic area. The type of unplanned fire event (i.e., suppressed or managed) will directly affect the ability of the responsible jurisdictional fire authority to comply with requirements to protect public health and visibility. The WDEQ-AQD recognizes that where fires are of an emergent nature or incendiary, it is likely that the primary goal is to extinguish the fire (i.e., unplanned fire under suppression), and public and fire fighter safety override air quality considerations. As a result, the requirements for unplanned fire that is under suppression will differ from those requirements for unplanned fires that are managed to accomplish specific pre-stated management objectives (unplanned fire under management). See the Elements and Requirements section below for detail.

4.2. SMP-I and SMP-II

There is also a distinction made in the SMP between larger planned burn projects and smaller planned burn projects, the underlying assumption being that the larger the burn, the more emissions will be produced and the more capability the burner has to implement and manage the burn. The first category (SMP-I) is for those planned burn projects likely to produce minimal impacts, but for which there is limited historical data. The second category (SMP-II) is for those planned burn projects likely to produce more significant impacts, and for which greater smoke management effort is appropriate to protect public health and visibility. There are fewer requirements for SMP-I level planned burn projects than for SMP-II, most of which are related to information collection. This information will enable better quantification of the impacts of planned burn projects under SMP-I, which will be used for possible revision of the SMP in the future.

4.3. Thresholds

Wyoming's requirements for vegetative material burning are set up in a tiered structure that is depicted in Figure 1. Each vertical line in Figure 1 represents a threshold, to the right of which the requirements change.

² At the time this document was written, volunteer jurisdictional fire authorities are only applicable to unplanned fires under suppression since volunteers are not currently managing unplanned fire events to accomplish specific pre-stated management objectives in a pre-defined geographic area.

Open Burning Ch. 10, Sec. 2	Smoke Management Ch. 10, Sec. 4 Vegetative Material	
<u>Vegetative Material Burner</u>	<u>Planned Burn Projects Burner</u>	<u>Unplanned Fire Jurisdictional Fire Authority</u>
	SMP-I	SMP-II

Figure 1. Vegetative Material Burning Tiered Structure, WAQSR Chapter 10

The first threshold establishes where the burn falls: under either Chapter 10, Section 2 or under Chapter 10, Section 4. This threshold is 0.25 tons of PM₁₀ per day per burn. This threshold amount is intended to ensure that the SMP addresses the burning that produces more significant emissions and impacts to Wyoming’s air quality and visibility. For example, 0.25 tons PM₁₀ per day is equivalent to burning 16 acres of field crops or 34 miles of weeds in an irrigation lateral that is three feet wide. The second threshold is between SMP-I and SMP-II, and is 2 tons of PM₁₀ per day per planned burn project. These thresholds are based on emissions produced to provide equitability between burners as they take into account the different vegetation types and quantities (burn area or pile volume). For example, 2 tons PM₁₀ per day is equivalent to burning 130 acres of field crops or 68 acres of shrub land.

To assist the burner, the WDEQ-AQD has developed an equivalency table that represents, by vegetation type, what acreage or pile volume amounts produce 0.25 and 2 tons of PM₁₀ emissions, using vegetation type and vegetation quantity and emission factors. This table can be found in the Forms and Instructions section of this document.

Finally, the third threshold is for unplanned fire events, and is 50 acres. Most unplanned fires within the state occur in forest and shrub land, and the 50-acre threshold best equates to the SMP-II threshold of 2 tons per day PM₁₀ emissions for these vegetation types. Therefore, the requirements for unplanned fire events are triggered when the unplanned fire event exceeds 50 acres. Acreage is used for this threshold, instead of emissions, so as to parallel current federal and state land management tracking systems for unplanned fire events, which are based on acreage.

The thresholds for the different levels of vegetative material burning are represented in Figure 2.

Open Burning Ch. 10, Sec. 2	Smoke Management Ch. 10, Sec. 4 Vegetative Material	
<u>Vegetative Material Burner</u> ≤ 0.25 tons/day PM₁₀	<u>Planned Burn Projects Burner</u> > 0.25 tons/day PM₁₀	<u>Unplanned Fire Jurisdictional Fire Authority</u> > 50 acres
	SMP-I < 2 tons/day PM₁₀	SMP-II ≥ 2 tons/day PM₁₀

Figure 2. Vegetative Material Burning Tiered Structure and Thresholds, WAQSR Chapter 10

4.4. Distance Thresholds

There are some SMP elements that are affected by the planned burn project's proximity to either populations or to nonattainment or Class I areas: these elements are public information, air quality monitoring, and evaluation of smoke dispersion. This means that the requirements of these elements are dependent upon how close the planned burn project is to a possibly smoke sensitive person(s) or area(s). For SMP-I planned burn projects, the distance threshold is 0.5 mile; that is, if the burn takes place within 0.5 mile of a population, then certain requirements must be met. For SMP-II level planned burn projects, the distance threshold is within 10 miles of a population or nonattainment area, which provides greater public health protection from the emissions of these larger planned burn projects. There is a separate distance requirement for SMP-II level planned burn projects in relation to Class I areas, 30 miles, to allow for greater consideration of regional impacts on visibility, as specifically required by the Regional Haze Rule.

4.5. Long-Term Planning Threshold

There is also a threshold specific to the long-term planning element: 100 tons per year of PM₁₀. This threshold relates to those burners and/or land managers with substantial total planned burn projects in a given year. The threshold of 100 tons per year PM₁₀ emissions captures those burners likely to have the capability to comply, and parallels the threshold commonly used for large point sources in Wyoming that also have additional reporting requirements.

4.6. Deadlines

Specific deadlines for the burner or the responsible jurisdictional fire authority are not addressed in Chapter 10, Section 4 so as to allow for greater flexibility in the revision of this new program. Instead, the specific deadlines are addressed in this document, and represent what the WDEQ-AQD will use to enforce compliance with Chapter 10, Section 4. These deadlines may be reconsidered for their appropriateness and workability as part of the annual evaluation of the SMP, and the Division may revise them if the evaluation so indicates.

5. Elements and Requirements

The SMP includes several elements, under each of which are specific smoke management requirements for burners and responsible jurisdictional fire authorities. The SMP elements include:

1. Registration and Notification,
2. Post Burn Reporting,
3. Smoke Management Education,
4. Public Information,
5. Alternatives to Burning,
6. Emission Reduction Techniques,
7. Evaluation of Smoke Dispersion,
8. Air Quality Monitoring, and
9. Long-Term Planning.

A table presenting a summary of these elements and associated requirements is located in the Executive Summary.

These elements are the generally accepted components of smoke management programs as described in the guidance and regulatory documents of the EPA. Each element and its requirements are presented below in a format that includes a section on the following: Purpose of the Element, Application Specific to Wyoming, and Requirements, with sub-sections addressing SMP-I Requirements, SMP-II Requirements and Unplanned Fire Requirements.

In the first section, the purpose of each element is explained, giving the general reason that the element is included in a SMP. For Wyoming's SMP, each of the standard elements was considered for its relevance and applicability to Wyoming, and requirements were developed as appropriate for current conditions. Where Wyoming departed from SMP requirements as generally outlined in other states, this departure is explained in the second section on application specific to Wyoming. The section on application specific to Wyoming also explains the circumstances in Wyoming that prompted the development of these specific requirements. The third section addresses all of the requirements that pertain to SMP-I, SMP-II and Unplanned Fire.

The Elements and Requirements material is intended to explain the elements and give a general understanding of what is required under each. For more specific information on how to implement the requirements, such as filling out forms, acceptable methods of informing the public, how to evaluate smoke dispersion and more, see the Forms and Instructions section of this document.

5.1. Registration and Notification

Purpose of the Element

The WDEQ-AQD has the responsibility to protect public health and visibility from adverse air quality impacts, and does this best by anticipating possible air quality impacts and then acting to mitigate them or, if this is not feasible, to forewarn the public. The burner provides certain information to the WDEQ-AQD prior to ignition of the planned burn project in the registration and notification processes that assist the department in this role.

Application Specific to Wyoming

In Wyoming, it was agreed that there have not been significant problems with vegetative material burning in the past,³ and therefore, the pre-burn information submittal should be the least burdensome possible on the burner. However, it was also agreed, as recognized by the Regional Haze Rule, that burning may need to increase.⁴ Therefore, it will be important to quantify the emissions from burning so as to ascertain if there are currently unknown problems associated with burning, if they are likely in the future, and what types of burning are occurring (e.g., ecosystem restoration or maintenance, burning of crop residue, weed abatement, etc.). To

³ This determination was made based on a review of the number of complaints received, rather than on a conclusive study of monitoring or tracking data. These types of data did not yet exist for the State of Wyoming at the time of the writing of this document.

⁴ 64 FR 35735.

this end, much of the pre-burn information is focused on facilitating the state's collection of descriptive data about vegetative material burning in the State of Wyoming.

Requirements

Registration is only required for SMP-II planned burn projects and Notification is required for both SMP-I and SMP-II burn projects. This information provides the WDEQ-AQD advance notice of the intent to burn, and enables the WDEQ-AQD to conduct a daily airshed capacity assessment to determine if the airshed can accommodate the amount of planned emissions without significant impacts.

This assessment takes into consideration not only the burning that is taking place on that day in Wyoming, but also considers impacts from other states' and tribes' activities. SMP-I burners will not be asked to modify in deference to the smaller size of the planned burn projects and the capability of the burners. SMP-II burners and the jurisdictional fire authorities responsible for unplanned fire events under management will be considered in modification plans, if so indicated by the airshed assessment. See the Airshed Assessment and Modification Protocol section below for more information about how the daily airshed assessment and modification will be conducted.

SMP-I Requirements (> 0.25 tons/day PM_{10} AND < 2 tons/day PM_{10})

Registration

SMP-I planned burn projects are not required to be registered by the burner with the WDEQ-AQD. However, the WDEQ-AQD encourages all burners to register to assist with the most accurate airshed assessment. For those SMP-I burners interested in registering, please see the SMP-II Requirements section below.

Notification

SMP-I burners will be required to notify the WDEQ-AQD of their intent to burn no later than one hour prior to ignition. This timeframe enables the WDEQ-AQD to take SMP-I level planned burn projects into consideration in the airshed assessment. Since the SMP is administered during regular business hours only, burners who plan to burn over the weekend should contact the WDEQ-AQD by close of business on the business day prior to the weekend. Burners under SMP-I may notify the WDEQ-AQD by phone, fax or e-mail and provide the following information:

- Burner Contact Information and
- Location of the Planned Burn Project

SMP-II Requirements (≥ 2 tons/day PM_{10})

Registration

SMP-II burners are encouraged to submit their Registration Forms by January 31st to give the WDEQ-AQD greater ability for planning and the prediction of smoke impacts for the year. Those burners who submit their Registration Forms earlier to the WDEQ-AQD will gain precedence in the modification process over planned burn projects with later registration submittal. The Registration Form is due to the WDEQ-AQD *no later* than two weeks prior to the anticipated start of the planned burn project.

Burners must submit registration information on the form provided by the WDEQ-AQD. For each planned burn project, one Registration Form is submitted for the calendar year. The burner defines the scope of their burn project (a planned burn project is an area that is contiguous and is being treated for the same land management objectives). For example, a thinning project has resulted in 200 slash piles to be burned in one thinning unit. The burning of the slash piles may occur over a three to four month period, but is considered one planned burn project; therefore only one Registration Form is needed. Alternatively, a burner may have several planned burn projects in a year all geographically separated and for different management objectives (e.g., ecosystem restoration of overgrown grassland in the foothills or removal of non-native vegetation along a river corridor). Each of these would be considered a separate planned burn project, and thus require a separate Registration Form.

Notification

Notification by SMP-II burners of their intent to proceed with registered burn projects provides the WDEQ-AQD with verification that the planned burn submitted on the Registration Form will indeed take place. SMP-II burners will notify the WDEQ-AQD no later than 10:00 a.m. one business day prior to the planned ignition of the burn project to facilitate airshed assessment. Since the SMP is administered during regular business hours only, burners who plan to burn over the weekend should contact the WDEQ-AQD by 10:00 a.m. on the business day prior to the weekend. Burners under SMP-II may notify the WDEQ-AQD by phone, fax or e-mail, and may use the form provided, or may provide to the WDEQ-AQD the following information:

- Planned Burn Project Identification Information (Name & Identification Number from the Registration Form)
- Planned Burn Date(s)
- Daily Burn Area or Daily Pile Volume (most likely amount and maximum possible amount)

SMP-II burners, when submitting daily notification amounts to WDEQ-AQD, will submit both the most likely and maximum possible burn accomplishment amounts. The SMP-II burner must not burn more than the maximum acreage or pile volume for the day indicated in the notification because the airshed assessment is based on daily notification information.

SMP-II burners may be included in modification plans, if so indicated by the daily airshed assessment. Modification strategies will be determined by the WDEQ-AQD in consultation with the burner(s), and could include the need to monitor with instrument(s), reduce acreage, alter wind direction prescription, or postpone until a better day. If a modification of the planned burn project is indicated by the airshed assessment, the WDEQ-AQD will notify the burner no later than 3:00 p.m. one business day prior to the planned ignition of the burn project (or for planned burn projects taking place on a weekend day, by 3 p.m. of the business day prior to the weekend). If the WDEQ-AQD does not contact the burner regarding modification, the burner may proceed with the planned burn project. For more information, see the Airshed Assessment and Modification Protocol section below.

Unplanned Fire Requirements (> 50 acres)

Registration and Notification

The WDEQ-AQD will utilize the tracking mechanism that is already in place for unplanned fire events (i.e., the daily situational reports) to satisfy the WDEQ-AQD registration and notification element, and to conduct the daily airshed assessment.

Should the daily airshed assessment indicate that modification of vegetative material burning is needed to mitigate smoke impacts, and the WDEQ-AQD determines that the management strategy of an unplanned fire under management needs modification,⁵ the WDEQ-AQD staff will notify the responsible jurisdictional fire authority no later than 3:00 p.m. each business day. If no notification is made, the responsible jurisdictional fire authority may proceed with the management strategy. Where the responsible jurisdictional fire authority is a volunteer organization, they are not subject to management strategy modification of an unplanned fire under management.⁶

5.2. Post Burn Reporting

Purpose of the Element

Post burn activity reporting information provided by the burner and responsible jurisdictional fire authority to the WDEQ-AQD provides the basis for an emissions inventory and for future evaluation and possible modification of the SMP and Chapter 10, Section 4.

Application Specific to Wyoming

A submission deadline for this information of six weeks following the completion of the planned burn project was instituted so as to accommodate the different burning schedules and capabilities of the Wyoming burn community.

It will be critical to have reporting compliance from all burners and responsible jurisdictional fire authorities in Wyoming so as to have an adequate body of data for burning practices in the state. Currently the Wyoming DEQ has very little information relative to the extent and magnitude of burning within the State. This information will be gathered from the Post Burn Reporting Form and will provide the basis for any future modifications to the SMP and Chapter 10, Section 4.

Requirements

SMP-I Requirements (> 0.25 tons/day PM₁₀ AND < 2 tons/day PM₁₀)

SMP-I burners will be required to submit post burn activity information no later than six weeks following the completion of the burn. Burners must use the Post Burn Reporting Form provided by WDEQ-AQD and one form per planned burn project must be submitted. For example, a farmer plans to burn crop residue from several hundred acres that may occur over several weeks, depending on weather conditions. This is considered one burn project (same land management

⁵ The WDEQ-AQD recognizes that modification opportunities to the management strategy for an unplanned fire event may be limited in the context of mitigating smoke impacts.

⁶ At the time this document was written, volunteer jurisdictional fire authorities are only applicable to unplanned fires under suppression since volunteers are not currently managing unplanned fire events to accomplish specific pre-stated management objectives in a pre-defined geographic area.

objective for all acreage and on contiguous land); therefore only one Post Burn Reporting Form is needed. The information collected from these forms will enable better quantification of SMP-I impacts. The six-week due date for submitting reporting information will accommodate the WDEQ-AQD getting accurate information in a timely manner while allowing the burner adequate time to complete his/her burn and handle the related activities.

SMP-II Requirements (≥ 2 tons/day PM₁₀)

SMP-II burners will also be required to submit post burn activity information no later than six weeks following the completion of the burn. All post burn reporting must be submitted using the Post Burn Reporting Form provided by the WDEQ-AQD, and one form per planned burn project must be submitted. For example, a burner may have several planned burn projects in a year all geographically separated and for different management objectives (e.g., ecosystem restoration of overgrown grassland in the foothills or removal of non-native vegetation along a river corridor). Each of these would be considered a separate planned burn project, and thus require a separate Post Burn Reporting Form. The six-week due date for submitting reporting information will accommodate the WDEQ-AQD getting accurate information in a timely manner while allowing the burner adequate time to complete his/her burn and handle the related activities.

Unplanned Fire Requirements (> 50 acres)

All jurisdictional fire authorities (including volunteer fire organizations) responsible for unplanned fire events (both managed and under suppression) will be required to submit post burn activity information for these events that exceed 50 acres no later than December 31st of each year. For example, a jurisdictional fire authority may have been responsible for several unplanned fire events in a year all geographically separated. Each of these would be considered a separate unplanned fire event, and thus each would require a separate Post Burn Reporting Form. The deadline for post burn information submittal by responsible jurisdictional fire authorities is extended to the end of the calendar year so as to accommodate existing reporting mechanisms and schedules. All post burn reporting must be submitted using the form provided by the WDEQ-AQD, and the responsible jurisdictional fire authority should submit one form per unplanned fire event that exceeds 50 acres.

The WDEQ-AQD, in cooperation with the Wyoming State Forestry Division, will utilize the tracking mechanism that is already in place for fire incident reporting (i.e., Wyoming Fire Incident Reporting System - WFIRS) to satisfy the WDEQ-AQD post burn reporting requirement for non-federal jurisdictional fire authorities, provided that the non-federal jurisdictional fire authority has submitted the WFIRS information to the Wyoming State Fire Marshal's Office.

5.3. Smoke Management Education

Purpose of the Element

Smoke management education is part of the process used to ensure that burns occur in such a way as to minimize smoke impacts on air quality. The purpose of requiring some form of smoke management education is to make the burner and responsible jurisdictional fire authority aware of air quality and visibility issues related to emissions from vegetative material burning.

Application Specific to Wyoming

The WDEQ-AQD has developed smoke management education materials, which include information on topics such as effects of fire emissions, emissions factors, fuel loading and calculation methods as well as emission reduction techniques and how to implement them. Familiarity with this material will enable burners and responsible jurisdictional fire authorities to be more aware of emissions produced from their planned burn projects and unplanned fire events, how these impact air quality, as well as what can be done to reduce both emissions and impacts. This material is available from the WDEQ-AQD and can be found on the WDEQ-AQD website.

Requirements

SMP-I Requirements (> 0.25 tons/day PM_{10} AND < 2 tons/day PM_{10})

Although smoke management education is not a requirement for SMP-I burners, they are encouraged to voluntarily review the educational material provided by the WDEQ-AQD so as to enhance their understanding of the protection of air quality through smoke management.

SMP-II Requirements (≥ 2 tons/day PM_{10})

SMP-II burners are required to have reviewed smoke management educational material supplied by the WDEQ-AQD or have completed a training that covers the same topics (e.g., the National Wildfire Coordinating Group training), prior to implementing planned burn projects. The burner will indicate this information in the space provided on the WDEQ-AQD Registration Form.

Unplanned Fire Requirements (> 50 acres)

Jurisdictional fire authorities responsible for unplanned fire under management will be required to have reviewed smoke management educational material supplied by the WDEQ-AQD or have completed a training that covers the same topics (e.g., the National Wildfire Coordinating Group training). The responsible jurisdictional fire authority will indicate this information in the space provided on the WDEQ-AQD Post Burn Reporting Form. Although volunteer responsible jurisdictional fire authorities and jurisdictional fire authorities responsible for unplanned fire events under suppression are not required to review smoke management education materials, such organizations are encouraged to do so.

5.4. Public Information

Purpose of the Element

The general public can take precautions against smoke exposure if they are aware of when and where burning will take place. Since the burner is intentionally compromising air quality, the burden is on the burner to make a good faith effort to inform the public so that smoke exposure can be avoided if desired.

Public notification can take many forms including: phone calls, mass mailings, newspaper ads or articles, radio or television spots, media releases, door to door visits, posting flyers at prominent locations (e.g., post office, supermarket, police department, etc.), certified letters or even public

open houses.⁷ A good faith effort means that the burner and responsible jurisdictional fire authority should identify the affected population and select at minimum one public notification method that is appropriate to that population. For example, for rural areas a flyer in the local post office may suffice; for urban areas a public service announcement might be more appropriate. WDEQ-AQD has purposefully not specified what public notification methods must be used to give the burner and responsible jurisdictional fire authority greater latitude in selecting the simplest method that will accomplish the objective of notifying potentially affected people.

The burner will satisfy the documentation requirement by indicating on the Post Burn Reporting Form what type of public notification was implemented and when. Keeping proof of public notification is not required. However, saving receipts for advertisements placed, copies of flyers posted with a list of the posting locations, etc. is another form of documentation the burner may find advantageous should issues arise from individuals with complaints that they were not notified.

The public notification requirement includes all populations within 0.5-mile radius of SMP-I level planned burn projects, and within a 10-mile radius of SMP-II level planned burn projects and unplanned fire events. Any population includes even one household since the right to protection from air quality impacts is no less important for one individual than for many. However, this is not intended to mean that burners and responsible jurisdictional fire authorities must notify every individual within the specified distance parameter; rather, a good faith effort should be made on the part of the burner and responsible jurisdictional fire authority to utilize a public information method that is likely to reach the affected population.

Application Specific to Wyoming

In Wyoming there are many SMP-I burners located in rural areas that do not have central posting locations, not to mention newspapers or television stations. Therefore the burden of public notification may prove unduly onerous in some situations. To address this, a provision has been included that allows SMP-I burners in areas of low population density (i.e., an average of one dwelling unit per ten acres) to satisfy the public notification requirement by notifying the appropriate jurisdictional fire authorities. This provision puts more of a burden on those individuals occupying the low population density areas in that the onus is on them to contact the jurisdictional fire authority for burn information. Since places of employment and recreation areas present a greater opportunity for centralized posting, the low population density provision only applies to dwelling units.

Requirements

All burners are required to contact the jurisdictional fire authority(ies) responsible for the geographic area in which the planned burn project is to occur immediately prior to burn ignition. The jurisdictional fire authority is included in this requirement as a key disseminator of public information regarding fire. This notification is not a request to burn, but simply a notification that the burner intends to burn. This information circumvents the jurisdictional fire authority from unnecessary and costly investigation/emergency response action, and enables the jurisdictional fire authority to provide an informed response to public calls/complaints. Such

⁷ It is likely that public notification measures utilized by federal land managers (e.g., daily fire updates issued by public affairs office) will satisfy this requirement.

notification may also be a requirement of county or other local jurisdictions, and if so, any requirements regarding deadlines and/or methods (e.g., directly, county sheriff, dispatcher) will prevail. In the case of jurisdictional fire authorities responsible for unplanned fire events, notification of other jurisdictional fire authorities responsible for the geographical area in which the unplanned fire event is occurring is required.

Notifying the jurisdictional fire authority should not be confused with assuring fire safety. There are other agencies (e.g., local fire marshal, fire department, Wyoming State Forestry, etc.) enforcing fire safety, the requirements of which may override air quality considerations. Keeping documentation of jurisdictional fire authority notification is not required. However, creating an informal log of notification may prove advantageous to the burner should issues arise with the jurisdictional fire authority.

SMP-I Requirements (> 0.25 tons/day PM_{10} AND < 2 tons/day PM_{10})

Burners under SMP-I must make a good faith effort to utilize a minimum of one public notification method to notify the populations that are located within one half mile of the planned burn project. The burner must conduct public notification no sooner than 30 days and no later than two days in advance of the ignition of the planned burn project, and will provide documentation of public notification on the Post Burn Reporting Form.

In addition, the burner will also notify the jurisdictional fire authority per the requirements of the jurisdictional fire authority or, absent any, immediately prior to ignition. Such notification is intended to be informal, such as a phone call. If the burner is in an area of low population density, then the burner's notification of the jurisdictional fire authority satisfies the public notification requirement. Low population density means an average of one dwelling unit per ten acres.

SMP-II Requirements (≥ 2 tons/day PM_{10})

Burners under SMP-II must make a good faith effort to utilize a minimum of one public notification method to notify populations within 10 miles of the planned burn project. The burner must conduct public notification no sooner than 30 days and no later than two days in advance of the ignition of the planned burn project, and will provide documentation of public notification on the Post Burn Reporting Form.

In addition, the burner will also notify the jurisdictional fire authority per the requirements of the jurisdictional fire authority or, absent any, immediately prior to ignition. Such notification is intended to be informal, such as a phone call.

Unplanned Fire Requirements (> 50 acres)

Jurisdictional Fire Authorities that are responsible for unplanned fire events that exceed 50 acres must make a good faith effort to utilize a minimum of one public notification method to notify populations within 10 miles of the unplanned fire event. The jurisdictional fire authority must conduct public notification as soon as possible after the fire event exceeds 50 acres. The responsible jurisdictional fire authority will provide documentation of public notification on the Post Burn Reporting Form.

If there are other jurisdictional fire authorities responsible for the geographical area in which the unplanned fire event is occurring, they will be notified by the jurisdictional fire authority responsible for the unplanned fire event. Such notification is intended to be informal, such as a phone call.

Although volunteer responsible jurisdictional fire authorities are not required to conduct public notification or notify other jurisdictional fire authorities of unplanned fire events, they are encouraged to do so wherever possible.

5.5. Alternatives to Burning

Purpose of the Element

While it is recognized that fire plays a natural role in the ecosystem and is used as a land management tool, alternatives to burning are encouraged wherever feasible to minimize overall emissions from burning. The consideration of alternatives to burning assures that burners are aware of the choice to utilize fire and have made a choice in favor of it to support land management objectives. Alternatives to burning include any method of removing or reducing fuels by mechanical, biological or chemical treatments that replaces the use of fire.

The burner will decide when it is feasible to utilize an alternative to burning and will then document that consideration so that the emissions reductions can be recognized by the WDEQ-AQD. The feasibility of utilizing alternatives to burning is based on technical, environmental, economic, and public interest considerations. A refined list of feasibility considerations is included in the Forms and Instructions section of this document. For example, in considering the use of an alternative to burning the burner would want to consider if it was within the financial means of the burner, if it is environmentally sound, if it would adequately meet the land management objective, and so on. Documenting the reasons for non-use of alternatives will help the WDEQ-AQD identify and remove any administrative barriers to the use of alternatives to burning that may exist, which is a requirement of the Regional Haze Rule.

Application Specific to Wyoming

There is nothing specific to Wyoming for this element.

Requirements

SMP-I Requirements (> 0.25 tons/day PM_{10} AND < 2 tons/day PM_{10})

This element is not required for SMP-I level planned burn projects. However, if alternatives to burning do exist and are feasible for the burner, the WDEQ-AQD encourages burners to consider and utilize them whenever possible so as to reduce emissions.

SMP-II Requirements (≥ 2 tons/day PM_{10})

Burners must consider the use of alternatives to burning. For example, a farmer could cut and bale his/her barley stubble instead of burning it, or, in a wildland urban interface, vegetation is removed to reduce hazardous fuel buildup and then utilized offsite (e.g., firewood, posts and poles, etc.). A detailed list of possible alternatives to burning is included in the Forms and Instructions section of this document.

Burners must then document that the use of alternatives to burning was considered prior to the decision to utilize fire. The documentation includes citing the feasibility criterion that prevented the use of alternatives. This documentation must be included on the Registration Form provided by the WDEQ-AQD.⁸ Both the Registration Form and specific examples of how to document feasibility criteria are included in the Forms and Instructions section of this document.

Unplanned Fire Requirements (> 50 acres)

This element is not applicable to unplanned fire events, and therefore not required.

5.6. Emissions Reduction Techniques

Purpose of the Element

Any techniques used in conjunction with burning that reduce the actual amount of emissions produced from a planned burn project are considered actions to minimize emissions, or emission reduction techniques. Recognizing that fire plays a natural role in the ecosystem, that it is used as a land management tool and its use may increase, the WDEQ-AQD encourages the use of emission reduction techniques wherever feasible to minimize overall emissions from burning.

Some techniques for reducing emissions are the same as some alternatives to burning, for example, mechanical thinning. In determining which it is, the burner need only consider if the technique is used in conjunction with fire (e.g., thinning out understory prior to a burn to reduce emissions and reduce risk of crown fire) or to replace fire (e.g., thinning an entire stand instead of burning it). Techniques used in conjunction with fire are emission reduction techniques and those used to replace fire are alternatives to burning.

Application Specific to Wyoming

There is nothing specific to Wyoming for this element.

Requirements

SMP-I Requirements (> 0.25 tons/day PM₁₀ AND < 2 tons/day PM₁₀)

This element is not required for SMP-I burners. However, the use of emission reduction techniques is generally a part of best burning practices and the use of them wherever possible is encouraged of all burners by the WDEQ-AQD.

⁸ It is recognized that the consideration of the use of alternatives may be accomplished through the Federal Land Manager National Environmental Policy Act (NEPA) process, which may serve as the basis for the identification of non-use on the registration form.

SMP-II Requirements (≥ 2 tons/day PM₁₀)

While SMP-II burners are encouraged to use as many emission reduction techniques as feasible, a minimum of one emission reduction technique is required for each planned burn project. SMP-II burners will indicate which emission reduction techniques are being utilized for each planned burn project on the Registration Form provided by the WDEQ-AQD. Those planned burn projects with more emission reduction techniques indicated on the Registration Form will gain precedence in the modification process over burn projects with fewer emission reduction techniques planned.

A detailed list of possible emission reduction techniques is included in the Forms and Instructions section of this document. A waiver for this requirement may be requested and is explained in the section on Waivers below.

Unplanned Fire Requirements (> 50 acres)

This element is not applicable to unplanned fire events, and therefore is not required.

5.7. Evaluation of Smoke DispersionPurpose of the Element

The use of meteorological conditions can aid in identifying when burning is suitable and permissible based on the ability to minimize smoke impacts. Burning under optimal weather conditions maximizes smoke diffusion, thereby minimizing impacts. The purpose of this element is to ensure that the burner is aware of and uses meteorological conditions when conducting planned burn projects.

Application Specific to Wyoming

Other states use setbacks in both their open burning regulations and in their smoke management programs as a method of minimizing the impacts from smoke from smaller burns projects. However, in Wyoming it was decided that setbacks would not work to ensure suitable smoke dispersion due to the size of SMP-I level planned burn projects, as well as proximity to a population (for example, field crop burning is a type of burning that would not be conducive to setback requirements since the crop burn could be approximately 100 acres, produce 1.5 tons of PM₁₀ emissions, and extend from property line to property line).

As an alternative to setbacks, the burner's use of wind direction, wind speed and a downwind distance to a population is included in the SMP-I requirements as the way to minimize smoke impacts. This is a simple approach for SMP-I burners that approximates what many burners in Wyoming already do to consider weather conditions in relation their planned burn projects.

Alternatively, those SMP-I burners with the knowledge and expertise may choose to utilize the concept of ventilation category, which is the basis for the SMP-II requirement and is explained below.

Requirements

SMP-I Requirements (> 0.25 tons/day PM_{10} AND < 2 tons/day PM_{10})

Burners under SMP-I will only be allowed to ignite a planned burn project during daytime hours when there is a slight breeze and there is no population within 0.5 mile of the burn project in the downwind direction. To comply with this requirement the burner will document the time of day of the planned burn project, the wind direction and wind speed at the time of the burn project, as well as the distance to a population. This information will be documented on the Post Burn Reporting Form provided by the WDEQ-AQD. A waiver for any part of the requirement may be requested by the burner, and the process for doing this is explained in the section on Waivers below.

Use of a minimum wind speed of slight breeze is not to be confused with fire safety. For example, if it is a “red flag warning” day, it is unsafe to burn regardless of wind speed. There are other agencies enforcing fire safety, which overrides air quality considerations.

Additionally, those SMP-I burners with the knowledge and expertise may choose to follow the SMP-II requirements explained in the section immediately following this one, in lieu of the SMP-I requirement.

SMP-II Requirements (≥ 2 tons/day PM_{10})

There are two approaches that SMP-II burners may use to satisfy the requirements under this element, which take into account the SMP-II burners’ training, experience and resources. Both approaches are based on the concept of ventilation category. It is the burner’s choice as to which option to follow.

Ventilation category is a classification that describes the potential for smoke to ventilate away from its source. The classification (Excellent, Very Good, Good, Fair, Poor) is determined by multiplying the mixing height in feet by the transport winds in knots, thus providing the ventilation category in knot-feet. The ventilation category can be found in the National Weather Service’s Fire Weather Forecast, which is the WDEQ-AQD approved source for this information (see the Forms and Instructions section of this document for how to access this information). The representative ranges are included in the table below.

VENTILATION CATEGORY	KNOT-FEET
Excellent	$\geq 150,000$
Very Good	100,000 – 149,999
Good	60,000 – 99,999
Fair	40,000 – 59,999
Poor	$\leq 40,000$

Table 1. Ventilation Category

Under the first option, the burner may ignite the burn if the Ventilation Category is “Good” or better. The second option enables the burner to burn under “Fair” conditions, but involves more effort on the part of the burner to determine wind direction and distance to a population. If there

is no population within 10 miles of the planned burn project in the downwind trajectory then the burn may proceed under “Fair” conditions. A waiver for any part of the second option (i.e., deviations from the requirements to burn during “Fair” conditions or to burn during “Poor” conditions) may be requested by the burner and is explained in the section on Waivers below. The burner must document on the WDEQ-AQD provided Registration Form and in the Notification the ventilation category that s/he expects to burn under. The ventilation category under which the planned burn project was conducted must also be documented on the Post Burn Reporting Form provided by the WDEQ-AQD.

Use of the ventilation category is not to be confused with assessing fire safety. For example, a day providing excellent ventilation conditions may also be a “red flag warning” day, meaning it is unsafe to burn. There are other agencies enforcing fire safety, which overrides air quality considerations.

Unplanned Fire Requirements (> 50 acres)

This element is not applicable to unplanned fire events and therefore, is not required.

5.8. Air Quality Monitoring

Purpose of the Element

The purpose of monitoring air quality during a burn is to make the burner and responsible jurisdictional fire authority aware of smoke dispersion, direction, and impacts. This awareness will enable the burner and responsible jurisdictional fire authority to take corrective action should the monitoring show need. For example, if the wind changes direction and the smoke begins to billow toward a nearby home, the burner may want to consider taking action to mitigate or lessen smoke impacts (e.g., notify the home’s occupants, extinguish the burn, reduce the size of the burn). In order to accomplish this, the burner would need to make provision for this prior to initiating the planned burn project by having available vehicles with sprayers, tillage equipment, fire truck, or other source of water. Monitoring can be accomplished through visual observations and/or with monitoring instruments that enable an assessment of air quality impacts from smoke.

Application Specific to Wyoming

Since many SMP-I burners in Wyoming may lack the capability to document visual monitoring observations, the requirement for these burners was reduced to attendance and observance of the burn project only. This was considered a less-onerous way to ensure that these burners are aware of their smoke dispersal and possible impacts from it, and use this information in the management of their burn projects.

Requirements

SMP-I Requirements (> 0.25 tons/day PM₁₀ AND < 2 tons/day PM₁₀)

Burners under SMP-I will be required to attend and observe their planned burn projects periodically, but are encouraged to attend and observe the burn at all times. SMP-I burners are not required to document any observations, but rather to use the visual information in the management of their burns.

Periodic observation is not quantified temporally for SMP-I burners so as to accommodate the broad range of SMP-I burn projects, i.e., some burns may require more frequent observations than others. Therefore, it will be advisable for the burner to consider an adequate frequency of attendance at and observation of their burn project so as to fulfill the purpose of this requirement, which is to determine the smoke dispersion, direction, and impacts.

Alternatively, for those SMP-I burners with the knowledge and expertise, the requirement to attend and observe the planned burn project may be replaced with the SMP-II requirement of conducting and documenting visual monitoring, which is described in the section below.

SMP-II Requirements (≥ 2 tons/day PM₁₀)

SMP-II burners will be required to conduct and document visual monitoring on all planned burn projects. Visual monitoring is the simplest and most common method of monitoring smoke, and includes observing smoke plume characteristics such as direction, rise, color and density of the plume, and the time of day of these observations. Documentation of visual monitoring means any of or a combination of the following methods: successive observations noted on the Visual Monitoring Log, photos and accompanying Photo/Video Log, and video recordings and accompanying Photo/Video Log. For photo and video images, the Photo/Video Log must be completed to support the observations, which involves recording the date, time, location and direction of each image. Documentation of visual monitoring will be provided with the Post Burn Reporting Form.

SMP-II burners may also, on a case-by-case basis, be required to conduct and document ambient air quality and/or visibility monitoring using instruments as a relative measure of compliance with ambient air quality standards and impacts on visibility based on the planned burn project's proximity to a population, nonattainment area, or Class I area. Ambient air quality and/or visibility monitoring may be conducted using Federal and non-Federal reference method instrumentation as well as other techniques.⁹

The WDEQ-AQD will evaluate the need for instrument monitoring on a case-by-case basis in consultation with burner. In the evaluation the WDEQ-AQD will consider proximity to populations, nonattainment and/or Class I areas; duration and size of the burn; availability and type of equipment and trained personnel; prior air quality problems; regional impacts (e.g., smoke from other sources, pollution alerts, regional wide air stagnation, etc.); location to existing monitors; current and forecasted weather conditions; and other factors. From this evaluation, the WDEQ-AQD will determine whether the use of instrument monitoring is indicated to assure ambient air quality and/or visibility compliance.

Additionally, the burner must indicate on the Registration Form what type of monitoring will be conducted for the planned burn project, if applicable. In instances where the burner is required to conduct instrument monitoring, the burner will submit the results and documentation in conjunction with the Post Burn Reporting Form provided by the WDEQ-AQD.

⁹ The use of real-time instruments is gaining acceptance by federal land managers as an adaptive management tool. Since instantaneous concentrations are provided in "real-time", adjustments can be made to burning to reduce the concentrations recorded at a specific location.

Unplanned Fire Requirements (> 50 acres)

Under this element, the responsible jurisdictional fire authorities will be required to conduct and document visual monitoring on all unplanned fire events. In addition, based on an unplanned fire event's proximity to a population, nonattainment area, or Class I area, the responsible jurisdictional fire authority may be required, on a case-by-case basis, to conduct and document ambient air quality and/or visibility monitoring with instruments as a relative measure of compliance with ambient air quality standards and impacts on visibility. The documentation of the monitoring conducted will be submitted with the Post Burn Reporting Form.

The requirements for responsible jurisdictional fire authorities are the same as those for SMP-II burners; see above for a more detailed explanation of these requirements. Although volunteer fire organizations are not required to conduct visual monitoring, they are encouraged to do so wherever possible.

5.9. Long-Term Planning

Purpose of the Element

As required by the Regional Haze Rule, the WDEQ-AQD must consider fire projection information (i.e., future burn levels) and the anticipated effect on visibility in planning and when developing long-term strategies. For this reason, the long-term planning element is part of Chapter 10, Section 4. In addition, the use of alternatives to burning is included as a long-term planning requirement since the selection of alternatives to burning typically happens at the planning level, and therefore this information will not be available from the burner by any other means. The information provided under this element will enable the WDEQ-AQD to identify and report on emission reductions as a result of the use of alternatives to burning.

It is recognized that there are several realities of long-term planning (e.g., burn windows, weather conditions, funding, resource availability, politics, etc.) that affect the actual accomplishment of these planning projections. Therefore, the information collected under the long-term planning element will only be used to facilitate the WDEQ-AQD's planning efforts, and not to limit in future years the number or size of planned burn projects or enforce the planned use of alternatives to burning.

Application Specific to Wyoming

Larger burners tend to do more planning in advance of burn projects, making them more likely to have the capability to comply with the requirements associated with the long-term planning element, such as three-year projections of burn project amounts and records of alternatives to burning. The threshold of 100 tons per year PM₁₀ emissions captures those burners likely to have the capability to comply. For those burners that fall under the 100 tons per year PM₁₀ emissions threshold, future burn levels will be approximated by the WDEQ-AQD based on completed Post Burn Reporting Forms.

Requirements

Planned Burned Project Requirements (Total Planned Burn Projects > 100 tons/year PM₁₀)

Burners and/or land managers whose total planned burn projects in a year are projected to generate greater than 100 tons of PM₁₀ emissions will be required to submit a written report on the Long-Term Planning Forms provided by the WDEQ-AQD no later than January 31 every third year starting in 2005. The written report will include the long-term burn estimates for the next three years, including the location, burn area or pile volume, vegetation type, and type of burn for each planned burn project; and the alternatives to burning considered and utilized during the previous three years and planned for the next three years, including the location and area of treatment(s), the vegetation type(s), and the specific technique(s).

Unplanned Fire Requirements

This element is not applicable to unplanned fire, and therefore, is not required.

6. Waivers

Waivers may be requested for the emission reduction technique requirement (applicable to SMP-II only) and for smoke dispersion requirements (time of day, wind direction, wind speed, distance to a population, and ventilation category). If a burner anticipates the need for a waiver, a waiver request should be submitted in advance of ignition and in writing, outlining the reasons that a waiver is justified.

- SMP-II Emission Reduction Technique Waiver Submittal: The burner may request a waiver of this requirement from the WDEQ-AQD with the completed Registration Form, i.e., by January 31st or at least two weeks prior to the planned ignition of the burn project.
- SMP-I & SMP-II Smoke Dispersion Waiver Submittal: The burner may request a waiver of any part of this requirement from the WDEQ-AQD no later than 10:00 a.m. one business day prior to the planned ignition of the burn project. The waiver submittal timeframe, in this case, is set to accommodate the limited time for assessing meteorological conditions.

All waiver deadlines are based on business days since the SMP will be administered by the WDEQ-AQD during regular business hours (Monday through Friday, 8:00 a.m. to 5:00 p.m.) unless otherwise indicated in the Forms and Instructions section of this document. Therefore, if a burner would like a waiver of the wind direction requirement for a planned burn project to take place on a Sunday, a written waiver request must be submitted to the WDEQ-AQD no later than 10:00 a.m. on the preceding Friday.

Once the WDEQ-AQD staff receives the waiver request, it will be considered on a case-by-case basis. Factors that will be taken into consideration include, but are not limited to, proximity to sensitive persons or areas, vegetation type, and size of burn. The WDEQ-AQD may grant waivers with certain conditions required (e.g., additional public notification, additional monitoring, etc.), or may request additional information from the burner (e.g., map showing locations of the planned burn project and population(s), anticipated wind direction, etc.) in order to determine waiver approval or denial. The WDEQ-AQD staff will inform the burner of an approval or denial as soon as possible following the waiver submittal, but no later than 3 p.m. on

the business day prior to the planned ignition. In all cases, the burner must receive confirmation of the waiver *prior to* igniting the burn.

7. Program Management

This section was added as background and explanatory material to assist the burner in understanding how this new program will be administered and is supplemental to the guidance needed by burners to implement the regulation. The WDEQ-AQD District Compliance staff will still administer Chapter 10, Section 2 and the Cheyenne WDEQ-AQD staff in coordination with the District Compliance staff will administer Chapter 10, Section 4. In the first years of the program, the administrative hours will be regular business hours (Monday through Friday, 8:00 a.m. to 5:00 p.m.) unless otherwise indicated in the Forms and Instructions section of this document on the WDEQ-AQD Contact Information. The WDEQ-AQD staff may be contacted by mail, phone, voice-mail, fax, or e-mail.

The requisite forms may be submitted to the WDEQ-AQD by mail, fax, e-mail, or hand delivery. E-mail is a medium (i.e., a means of delivery) not a record. For that reason, the various documents that are sent and received through the e-mail system become records when they have been printed on paper as a hard record by the WDEQ-AQD.

The WDEQ-AQD website (<http://deq.state.wy.us/aqd/index.asp>) has a section devoted to “Open Burning and Smoke Management” that contains materials, such as this document, prepared to aid burners in complying with the regulatory requirements within Chapter 10, Section 2 and Chapter 10, Section 4.

7.1. Airshed Assessment and Modification Protocol

Coordination of burning activity is critical to avoiding cumulative impacts on public health and visibility within and across airsheds (see the maps in the Forms and Instructions section of this document) and to address regional transport issues with other states, tribes, and Canada. This coordination will be accomplished by a daily assessment of airshed capacity to determine if cumulative impacts to a particular airshed, or part of an airshed, are potentially excessive, and what appropriate action is needed to mitigate the potential impacts. This is best undertaken by the WDEQ-AQD as the central smoke management authority.

To determine if cumulative impacts are potentially excessive, the daily airshed assessment will be based on the information compiled by WDEQ-AQD on planned burn projects as well as predicted meteorological conditions for the time in question, including:

- Number of burns scheduled in a particular airshed for that day, including unplanned fire events in progress.
- Proximity of planned burn projects to each other and to populations, nonattainment and/or Class I areas.
- Size of the proposed planned burn projects. For each SMP-I burn; the amount must default to the 2 tons PM₁₀ maximum, unless otherwise specified by the burner.¹⁰

¹⁰ When notifying WDEQ-AQD of their burn project, SMP-I burners may voluntarily provide the vegetation type and maximum acres or pile volume to be burned on that day to make the daily airshed assessment more accurate.

- Magnitude of the impacts from other states, from unplanned fire events, and/or other source(s) of air quality impacts.
- Cumulative effects on ambient air quality standards (public health) and visibility.

The daily airshed assessment conducted by the WDEQ-AQD may, under certain circumstances, result in the determination that the capacity of the airshed is not sufficient to handle the emissions from fire. This could occur under conditions such as multiple burns in one airshed or one part of an airshed. For example, the Big Horn Basin may have unacceptable cumulative effects if field and ditch burning takes place at the same time as several federal land manager units are conducting burning, and/or when burning or unplanned fire events in another state impact Wyoming. In such instances, the WDEQ-AQD will be in the position of needing to minimize impacts, and will do this by working with burners and responsible jurisdictional fire authorities to modify their plans for that day's planned burn projects or unplanned fire events management strategy.¹¹

Modification will be determined by the WDEQ-AQD in consultation with the burner(s) and/or responsible jurisdictional fire authority(ies), and could include the need to monitor with instrument(s), reduce acreage, alter wind direction prescription, or postpone until a better day. The WDEQ-AQD will determine what appropriate action is needed to mitigate the potential impacts based on the following questions:

- Will monitoring provide reassurance that the impacts are not contributing to an exceedance of the ambient air quality standards or visibility impacts? If monitoring is necessary, on which burns and where should monitors be placed? Are there enough resources (i.e., instruments and personnel) available from burner(s), responsible jurisdictional fire authority(ies) and/or the WDEQ-AQD to conduct appropriate monitoring?
- Do the emissions need to be reduced through modifying burn size (acreage or pile volume) or utilizing additional emission reduction techniques? If modification is needed, which burns should be modified?
- Does burning need to be postponed? If postponement is necessary, which burns can be postponed?

In those circumstances requiring it, the WDEQ-AQD will require modification of burners and responsible jurisdictional fire authorities under the following protocol:

1. SMP-II level planned burn projects and unplanned fire events under management¹² will be considered for modification; SMP-II burn projects will be modified before unplanned fire events under management.
2. The last SMP-II level planned burn project registered will be the first modified, based on Registration Form submittal date.

¹¹ Little data existed at the time this document was written to project what percentage of burns in Wyoming may have to be modified on the basis of cumulative impacts to any given airshed. Data from other states indicates that fewer than 10% of burn projects would have to be modified or postponed.

¹² The WDEQ-AQD recognizes that modification opportunities to the management strategy for an unplanned fire event may be limited in the context of mitigating smoke impacts.

3. SMP-II level planned burn projects with the least number of emission reduction techniques planned will be modified before those with more planned.
4. SMP-II level planned burn project objective: specifically hazardous fuel reduction projects¹³ will take precedence over other objectives.

The modification protocol does not include SMP-I level planned burn projects since SMP-I burn projects impacts are considered to be minimal. Nor will modification be required of unplanned fire events under suppression since the fire is being actively suppressed, leaving no additional options for modification. Further, the modification protocol will be used by the WDEQ-AQD as an incentive mechanism to encourage burners to demonstrate maximum possible effort with regard to managing their smoke emissions.

The WDEQ-AQD will follow the process outlined below for communicating that the airshed assessment indicates the need for modification to SMP-II burners and/or responsible jurisdictional fire authorities.

- **SMP-II Modification Process:** the burner notifies the WDEQ-AQD no later than 10 a.m. one business day prior to the planned ignition of the burn project. The WDEQ-AQD will alert the burner no later than 3:00 p.m. one business day prior to the planned ignition of the burn project if a modification of the planned burn project is required. If WDEQ-AQD does not contact the burner, the burner may proceed with the planned burn project.
- **Unplanned Fire Under Management Modification Process:** the WDEQ-AQD staff will obtain the location and burn area from the daily situational reports for use in the airshed/cumulative effects assessment. The WDEQ-AQD will alert the responsible jurisdictional fire authority no later than 3:00 p.m. each business day, if a modification of the management strategy for the unplanned fire event is necessary to mitigate smoke impacts. If no contact is made, the responsible jurisdictional fire authority may proceed with the management strategy.

If requested by the burner or responsible jurisdictional fire authority, the WDEQ-AQD will follow-up with a letter documenting what modification is required, the reasons for the modification, and how the decision to modify was reached.

7.2. Emission Inventory and Tracking System

In accordance with Regional Haze Rule requirements, the WDEQ-AQD will establish a tracking system and an emissions inventory for fire sources within the State including, but not limited to, the following pollutants: PM₁₀, PM_{2.5}, NO_x, SO₂, CO, volatile organic compounds (VOC), elemental and organic carbon. WAQSR Chapter 10, Section 4 requires reporting on all past fire activity and this required reporting information will be recorded in a tracking system. For consistency, the State of Wyoming will use the emissions tracking system developed by the Western Regional Air Partnership (WRAP) as defined by the Western Regional Air Partnership *Policy on Fire Tracking Systems*. This policy identifies a process for gathering the essential post burn activity information necessary to consistently calculate emissions and uniformly assess fire

¹³ Hazardous fuel reduction refers to burning in areas where over density of vegetation could cause risk of catastrophic wildfire.

impact on regional haze. This policy is the basis for creating a fire emissions inventory within the State of Wyoming, using an emissions calculation mechanism developed by the Western Regional Air Partnership.

7.3. Surveillance and Enforcement

Surveillance and enforcement provides an oversight mechanism that assures adherence to smoke management efforts as defined by the Smoke Management Program and required by Chapter 10, Section 4. The intent of surveillance and enforcement is to provide a structure that penalizes those burners and responsible jurisdictional fire authorities that do not adhere to the regulatory requirements, without being an impediment to those burners and responsible jurisdictional fire authorities that do comply.

The Wyoming Environmental Quality Act authorizes surveillance, inspection, and enforcement for the WDEQ-AQD's regulations. WAQSR Chapter 10, Section 4(e)(ii) specifies that burners and responsible jurisdictional fire authorities shall give permission to WDEQ-AQD staff to enter and inspect for the purpose of investigating a planned burn project or unplanned fire event and for determining compliance or non-compliance. This permission extends for a maximum time of ten business days after the completed Post Burn Reporting Form is received by the WDEQ-AQD. Inspections during this ten-day period are to be conducted only after notification of the burner or responsible jurisdictional fire authority.

The WDEQ-AQD anticipates that the public education and outreach effort as well as implementation of the proposed regulations over time will result in participation and compliance with the proposed regulations, resulting in less staff time devoted to surveillance and enforcement. Enforcement would occur by WDEQ-AQD District Compliance staff when deviations from Chapter 10, Section 4 constitute a violation, which would then be subject to penalty. Penalties are typically arrived at through negotiated settlements, with the maximum penalty not to exceed \$10,000 per violation per day the violation continues, according to the Wyoming Environmental Quality Act.

7.4. Annual Program Evaluation

In the initial years of the Smoke Management Program, the WDEQ-AQD will be lacking certain information and authorities necessary to implement an equitable fee structure. Some of this information includes costs of the program, staffing requirements including the potential need for weekend staffing, developing and maintaining an emissions inventory and other important variables. The program has been designed to gather this information, but will necessitate some period of time to evaluate. One of the authorities the WDEQ-AQD will have to acquire is the legislative authority to implement a fee structure. The development of a fee structure and the related authorities will be considered as part of the annual program evaluation process.

The program evaluation is a mechanism to assess the adequacy of the Smoke Management Program in meeting the requirements of the Regional Haze Rule. The WDEQ-AQD will host an annual meeting between January 31 and April 1 with all burners and interested stakeholders to assess the adequacy of the design, impact and implementation of the program, based on each year's implementation. These program evaluations will be used to revise and improve the SMP and Chapter 10, Section 4, as needed. As has been WDEQ-AQD practice for guidance document

revisions and updates, the WDEQ-AQD will hold a public meeting before the Wyoming Air quality Advisory Board to provide for additional consideration and input.

Additional topics for discussion at the annual program evaluation meetings will include, but are not limited to, identification and removal of administrative barriers to the use of alternatives to burning and annual emission goals.

Annual Emission Goal

Under Section 309, the Regional Haze Rule requires the “establishment of annual emission goals for fire (excluding wildfire) that will minimize emission increases from fire to the maximum extent feasible.” (Regional Haze Rule §51.309 (d)(6)(v) Annual emission goals do represent a quantifiable value, but are not to be used as an emission limit or cap. Rather, these goals are set as a tool to assist states in achieving emissions reductions over time. These goals are statewide goals and therefore, not specific to any one burner or group of burners.

The minimum emission increase from fire is accomplished through the application of emission reduction techniques. The benefit from using the emission reduction techniques will be quantified either by quantifying the emissions averted through the use of emission reduction techniques using available emission factors or quantifying the percent of total acres on which emission reduction techniques are applied for all planned burn projects. Therefore, the quantification of the emission reductions achieved through the use of the emission reduction techniques constitutes the annual emissions goal. The emission goal will be established for the total of all planned burn projects for the upcoming year at the beginning of the calendar year. In addition, the emission goal will be established in cooperation with federal, state and private land managers and landowners.

FORMS and INSTRUCTIONS

The following section contains the various forms needed to comply with requirements of Wyoming's Smoke Management Program. With the forms are instructions for filling out and submitting them, as well as other resource material to aid in the understanding and implementation of the Smoke Management Program requirements.

Should burners or jurisdictional fire authorities need additional information, they should contact the Cheyenne WDEQ-AQD staff.

1. SMP-II Registration Instructions

The Registration Form is required for all planned burn projects expected to produce more than two tons of PM₁₀ per day (SMP-II level burn projects only). SMP-II burners are encouraged to submit their registration forms by January 31st to give the WDEQ-AQD greater ability for planning and the prediction of smoke impacts for the year. Those burners who submit their Registration Forms earlier to the WDEQ-AQD will gain precedence in the modification process over planned burn projects with later registration submittal. The Registration Form is due to the WDEQ-AQD *no later* than two weeks prior to the anticipated start of the planned burn project.

For each planned burn project, one Registration Form is submitted for the calendar year. The burner is responsible for determining the scope of his/her burn project. A planned burn project is an area that is contiguous and is being treated for the same land management objectives. For example, a thinning project has resulted in 200 slash piles to be burned in one thinning unit. The burning of the slash piles may occur over a three to four month period, but is considered one planned burn project; therefore only one Registration Form is needed. Alternatively, a burner may have several planned burn projects in a year all geographically separated and for different management objectives (e.g., ecosystem restoration of overgrown grassland in the foothills or removal of non-native vegetation along a river corridor). Each of these would be considered a separate planned burn project, and thus require a separate Registration Form.

The Registration Form asks for identifying information about the planned burn project and an estimate of acreage or pile volume to be burned. Acreage and pile volumes must be as accurate as possible. If plans change and this information needs to be modified, the burner must indicate the change as part of the notification process or on the Notification Form (see Notification Instructions below).

All information on the Registration Form is required to be filled out, unless otherwise indicated. There may be several options presented; in those cases, choose the appropriate option(s). This form may be submitted to the WDEQ-AQD by mail, fax, e-mail, or hand delivery.

Following are line-by-line instructions for filling out the Registration Form.

Contact Information. Provide information for the primary contact for this planned burn project; i.e., landowner, burn manager or burn boss. Give name, address, 24-hour phone number, and if available, fax and e-mail.

Explanation: This enables the WDEQ-AQD to contact the burner if necessary.

Burn Name. Provide the name of the planned burn project.

Explanation: This is to help the WDEQ-AQD identify separate projects by the same burner. The burner assigns the burn name. A planned burn project needs to be contiguous on the landscape and have similar burn objectives. If you do not typically name your burn, a last name or some other descriptor will suffice, as long as each planned burn project name is unique.

ID #. Leave the ID number space blank.

Explanation: The ID number will be assigned by the WDEQ-AQD upon receipt of the registration form. Once the WDEQ-AQD has assigned this number to a planned burn project, the

number will be provided to the burner. This number will be unique to a planned burn project and will be used for waiver requests, on the reporting form once the burn project is completed, and in any other communication with the WDEQ-AQD.

Location. Provide the name of the county in which the burning will occur. If the planned burn project overlaps more than one, provide the county in which ignition will take place. Provide the average elevation of the planned burn project. Provide at least one locator: latitude/longitude in decimal degrees; Universal Transverse Mercator (UTM) including the zone, easting, and northing; or legal including Section, Township, and Range. For latitude/longitude and UTM, please provide the reference datum (e.g., NAD27, NAD83, WGS84). If unable to determine this information, the following internet sites may prove helpful Graphical Locator <http://www.esg.montana.edu/gl/> and TopoZone <http://www.topozone.com/>.

Explanation: This information allows the WDEQ-AQD to plot all planned burn projects on a map, assisting with the analysis of burning across the state and in a given airshed.

Land Ownership. Specify the appropriate land ownership: federal, state, municipal, or private. For multiple land ownership, designate the primary ownership as 1, secondary as 2, and so on (e.g., federal 1, private 2, state 3).

Explanation: The land ownership will help WDEQ-AQD characterize burning across the state.

Sensitive Receptors. Specify if there is a population(s) or Nonattainment area(s) within a 10-mile radius of the planned burn project, or if there are Class-I areas within 30 miles.

Explanation: Providing this information makes the burner aware of the people and places that could be affected by the planned burn project, and notifies the WDEQ-AQD of additional requirements to be satisfied by the burner, that is monitoring and public notification.

Jurisdictional Fire Authority(ies). Provide the name of the jurisdictional fire authority(ies) you will notify.

Explanation: Providing this information makes the burner aware of the jurisdictional fire authority(ies) to be notified prior to ignition of the planned burn project.

Restoration Burn or Maintenance Burn. (For Grassland, Shrub Land and Forests ONLY)

Specify if the planned burn project will help **restore** the land to more healthy conditions, or if it will **maintain** existing healthy conditions. For clarification of the difference between “restoration” burn projects and “maintenance” burn projects, see the definitions as footnoted below.¹⁴

Explanation: This information helps the WDEQ-AQD characterize burning across the state.

¹⁴ Maintenance Burns – A prescribed fire or unplanned fire under management, in an ecosystem that is currently in an ecologically functional and fire resilient condition, which is utilized to mimic the natural role of fire.

Restoration Burns – The re-establishment of natural vegetation and fire-resilient condition accomplished through the use of prescribed fire or unplanned fire under management to reduce unwanted and/or unnatural levels of vegetation.

Time of Year. Specify the time(s) of year the planned burn project is expected to take place. For example, if it could be either a fall or spring burn, select both “March-May” and “September-November”.

Explanation: This information helps the WDEQ-AQD understand when burning is likely to occur in various airsheds.

Totals. Provide the best approximation of total maximum acreage and/or pile volume in cubic feet to be burned in this planned burn project. Also provide the number of day(s) you expect the burn to last.

Explanation: This information helps WDEQ-AQD to forecast emissions produced in the various airsheds.

Burn Size & Fuel Loading by Vegetation Type. Using the vegetation type of the burn, in the acres column, enter the acreage of the burn or, for pile burns, enter the acreage from which the piles originated. Then, in the tons/acre or cubic feet column, enter the fuel loading number in tons/acre if burning acreage or in cubic feet if burning piles.

Explanation: In order to forecast as accurately as possible the emissions produced, it is necessary to have identified the vegetation type and estimated the fuel loading, as both of these influence emissions.

Alternatives to Burning. Provide the reason(s) that alternatives to burning were not used in each of the relevant categories: technical, economic, environmental, public interests, administrative barrier and other. For example, use of herbicides may not be feasible due to the following three categories: 1) economics -- cost of treatment is prohibitive, 2) technical -- will not achieve land management objective, and 3) environmental -- results in adverse water quality impact. See the list of Alternatives to Burning as well as a list of Feasibility Considerations included in the Resource Material.

Explanation: This information will help the WDEQ-AQD to determine what feasibility considerations are relevant to the use of alternatives in Wyoming as well as to identify administrative barriers to the use of alternatives, so as to remove them where feasible.

Emission Reduction Techniques. For each emission reduction technique (ERT) that you are planning to use, enter the number of acres on which the ERT will be used. For piles, which are an ERT, enter the acreage from which the piled material originated. At least one ERT must be used for each planned burn project. ERT acres may add up to more than total project acreage. For example: “On a 250-acre pasture I will use grazing on 175 acres and burn before green-up on 150 acres.” See the list of ERTs included in the Resource Material. If one ERT cannot be utilized a waiver must be requested. See Waiver Instructions below for details.

Explanation: By providing this information to the WDEQ-AQD, a better estimate of emissions reduced per planned burn project can be calculated, which is a primary objective of the Smoke Management Program.

Ventilation Category. Specify under which ventilation conditions the planned burn project will be conducted. If “Fair” or “Poor” is selected, also provide wind direction(s) (i.e., the direction the wind is blowing from) under which the burning will occur and the distance to the nearest population downwind (the direction the wind is blowing toward) in miles. This can be a very

limited wind direction such as “SW” or it may be a range such as “S – E” or it can be “all”. If the burner plans to burn during “Poor” conditions, for example, night burning due to moisture requirements, a waiver form must be submitted. A waiver form must also be submitted for deviations from the requirements to burn during “Fair” conditions. See the Waiver Instructions below for further information.

Explanation: Burning under certain ventilation categories promotes better smoke dispersion and lessens smoke impacts. This information enables WDEQ-AQD to determine which planned burn projects will need additional precautions (e.g., monitoring).

Air Quality Monitoring. Specify what smoke monitoring is planned for the burn project. Visual monitoring is required for each planned burn project. If ambient air quality and/or visibility monitoring is planned, provide the type and location of instrument(s).

Explanation: Providing this information makes the burner aware that monitoring can be utilized to determine impacts resulting from the planned burn project, and enables the burner to take corrective action should the monitoring show the need.

Smoke Management Education. For review of the WDEQ-AQD educational material, provide the date reviewed. For other training programs, provide the name of the program and the date completed.

Explanation: By participating in an education program the WDEQ-AQD expects burners to become more aware of the smoke they produce, the impacts of the smoke, and the ways to minimize the potential emissions and impacts.

Comments. Provide any other comments that might help clarify or explain other entries.

Signature & Date. If submitting this form via mail or fax, please sign and date the form prior to submittal. If the SMP-II Registration Form is submitted electronically, the electronic signature will be attributed to the sender.

**STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION**

SMP-II Registration Form

CONTACT INFORMATION:

NAME _____ PHONE _____
 ADDRESS _____ FAX _____
 CITY _____ E-MAIL _____
 STATE _____ ZIP _____
 AGENCY/COMPANY (IF APPLICABLE) _____

BURN NAME _____ **ID #** *To Be Assigned by WDEQ*

LOCATION: COUNTY _____ ELEVATION (FEET) _____
 LEGAL: SECTION _____ TOWNSHIP _____ RANGE _____
 LATITUDE _____ LONGITUDE _____ DATUM _____
 UTM: ZONE _____ EAST _____ NORTH _____ DATUM _____

LAND OWNERSHIP: FEDERAL STATE MUNICIPAL PRIVATE

SENSITIVE RECEPTORS: POPULATION(S) NONATTAINMENT CLASS I AREA(S)
 w/i 10 MI. AREA(S) w/i 10 MI. w/i 30 MI.

JURISDICTIONAL FIRE AUTHORITY(IES) _____

FOR FOREST, GRASSLAND, & SHRUB LAND ONLY: RESTORATION MAINTENANCE

TIME OF YEAR: DEC. – FEB. MAR. – MAY JUNE – AUG. SEPT. – NOV.

TOTALS: ACREAGE _____ PILE VOLUME (CU-FT) _____ DURATION (DAYS) _____

BURN SIZE & FUEL LOADING BY VEGETATION TYPE:

VEGETATION	ACRES	TONS/ACRE OR CU-FT	VEGETATION	ACRES	TONS/ACRE OR CU-FT
Ponderosa Pine: open canopy			Ponderosa Pine: closed canopy		
Lodgepole Pine / Fir: little dead & down			Forest: heavy dead & down with brush		
Thinning Unit: not piled with red needles			Logging Slash: mod. accumulations		
Logging Slash: clearcut			Logging Slash Piles: hand		
Logging Slash Piles: tractor, clean			Logging Slash Piles: tractor, dirty		
Logging Slash Piles: landing			Juniper		
Sagebrush			Mountain Brush		
Short Grasses			Tall Grasses		
Barley			Corn		
Hay			Oats		
Seeds: Alfalfa			Seeds: Grass		
Wheat			CRP		
Weeds			Ditches		

ALTERNATIVES TO BURNING (SPECIFY REASON(S) FOR NON-USE):

TECHNICAL _____ ECONOMIC _____
 ENVIRONMENTAL _____ PUBLIC INTERESTS _____
 ADMIN. BARRIER _____ OTHER _____

EMISSION REDUCTION TECHNIQUES:

TECHNIQUE		ACRES	TECHNIQUE		ACRES
Reduce Area Burned	Burn Concentrations		Reduce Fuel Consumption	High Moisture in Large Woody Fuels	
	Isolate Fuels			Moist Litter and/or Duff	
	Mosaic Burning			Burn before Precipitation	
	Alternate Year Burning			Burn before Large Fuel Cures	
Reduce Fuel Load	Mechanical Removal			Increase Combustion Efficiency	Burn when Green
	Mechanical Processing		Burn Piles or Windrows		
	Firewood Sales		Backing Fires		
	Biomass: Electric Generation		Dry Conditions		
	Biomass Utilization		Rapid Mop-Up		
	Ungulates		Residue Moisture		
Reduce Fuel Production	Incorporation into Soil		Air Curtain Incinerators (WAQSR Ch 6, Sec 2 permit required)		
	Chemical Treatments		Aerial Ignition / Mass Ignition		
	Site Conversion		Into-the-Wind Striplighting		
New Fuels	Land Use Change		Mobile Field Sanitizer		
	Burn before Litter Fall		Maintaining Fire Line Intensity		
	Burn before Green-Up		Other (specify)		

VENTILATION EXCELLENT VERY GOOD GOOD FAIR* POOR*
CATEGORY: * SPECIFY WIND DIRECTION _____ & DISTANCE TO POPULATION (MI) _____

AIR QUALITY MONITORING:

WILL CONDUCT AND DOCUMENT VISUAL MONITORING (REQUIRED FOR ALL SMP-II PROJECTS).
 PLAN TO CONDUCT AMBIENT AIR QUALITY AND/OR VISIBILITY MONITORING, SPECIFY:

TYPE OF INSTRUMENT(S) _____

LOCATION OF INSTRUMENT(S) _____

SMOKE MANAGEMENT EDUCATION:

WDEQ-AQD SMOKE MANAGEMENT EDUCATION MATERIAL REVIEWED ON _____

TRAINING PROGRAM COMPLETED ON _____

COMMENTS _____

This form shall be submitted by January 31 or no later than two weeks prior to ignition.

SIGNATURE _____ **DATE** _____

If SMP-II Registration Form is submitted electronically, the electronic signature will be attributed to the sender.

2. Notification Instructions

All burners in the Smoke Management Program (SMP-I and SMP-II) must submit notification of their intent to burn to WDEQ-AQD in advance of burn ignition. Notification is required for each day of burning.

Explanation: The information provided in the notification gives WDEQ-AQD specific and accurate information on which to base their daily assessment of airshed capacity.

2.1. SMP-I Notification

SMP-I notification is due no later than one hour prior to ignition and must include the burner contact information (name, address and phone number) and the location of the planned burn project.

Although not required, SMP-I burners may choose to voluntarily provide the vegetation type and maximum acres or pile volume (cubic feet) to be burned on that day. If this information is provided, it will be used to estimate emissions for the planned burn project to make the daily airshed assessment more accurate thereby avoiding cumulative impacts on public health and visibility. If this information is not provided, SMP-I burn projects must default to the 2 tons PM₁₀ per day maximum emissions.

This notification information must be submitted to the WDEQ-AQD, and may be submitted via phone, fax or e-mail. For the burner's convenience, the WDEQ-AQD has created a Notification Form, the use of which is optional. For multiple day burns, the WDEQ-AQD form has been designed to accommodate up to one week's worth (seven days) of notifications. Due to the limited space on the form, burners using the WDEQ-AQD form for planned burn projects exceeding seven days, will need to submit another Notification Form.

For SMP-I burners using the SMP-I Notification Form, the following line-by-line instructions apply.

Contact Information. Provide information for the primary contact for this planned burn project; i.e., landowner, burn manager or burn boss. Give name, address, 24-hour phone number, and if available, fax and e-mail.

Explanation: This enables the WDEQ-AQD to contact the burner if necessary.

Location. Provide the name of the county in which the burning will occur. If the planned burn project overlaps more than one, provide the county in which ignition will take place. Provide the average elevation of the planned burn project. Provide at least one locator: latitude/longitude in decimal degrees; Universal Transverse Mercator (UTM) including the zone, easting, and northing; or legal including Section, Township, and Range. For latitude/longitude and UTM, please provide the reference datum (e.g., NAD27, NAD83, WGS84). If unable to determine this information, the following internet sites may prove helpful Graphical Locator <http://www.esg.montana.edu/gl/> and TopoZone <http://www.topozone.com/>.

Explanation: This information allows the WDEQ-AQD to plot all planned burn projects on a map, assisting with the analysis of burning across the state and in a given airshed.

Nearest Population. (Voluntary)

Provide the distance (in miles) to the nearest population(s) from the planned burn project.

Explanation: Providing this information makes the burner aware of the people and places that could be affected by the planned burn project.

Daily Burn Information. (Voluntary)

Explanation: This information allows the WDEQ-AQD to make the analysis of burning across the state and in a given airshed more accurate thereby avoiding cumulative impacts on public health and visibility. If this information is not provided, SMP-I burn projects must default to the 2 tons PM₁₀ per day maximum emissions.

Date(s). Enter the date(s) (month/day/year) when burning is expected to occur.

Vegetation Type(s). Enter the vegetation type(s) of the burn.

Area. Enter the maximum possible estimated acreage for each day. Leave blank or enter "N/A" if burning piles.

Pile Volume. Enter the maximum possible estimated pile volume in cubic feet for each day. Leave blank or enter "N/A" if not burning piles.

Comments. Provide any other comments that might help clarify or explain other entries.

Signature & Date. If submitting this form via fax, please sign and date the form prior to submittal. If the SMP-I Notification Form is submitted electronically, the electronic signature will be attributed to the sender.

2.2. SMP-II Notification

SMP-II notification is due by 10:00 a.m. one business day prior to ignition. Notification information includes:

- a) Burn Name,
- b) ID # (issued by the WDEQ-AQD),
- c) Date(s) of planned burn project,
- d) The maximum acres or pile volume (cubic feet) to be burned on that day,
- e) The most likely acres or pile volume (cubic feet) to be burned on that day, and
- f) Ventilation Category, and if "Fair", wind direction and distance to nearest downwind population.

This notification information may be submitted to the WDEQ-AQD by phone, fax or e-mail, or may be submitted using the form provided by the WDEQ-AQD. For multiple day burns, one week's worth (seven days) of notifications may be submitted together, as long as maximum daily acreages/number of piles are given for each day. For planned burn projects exceeding seven days, burners may submit another Notification Form.

For SMP-II burners using the SMP-II Notification Form, the following line-by-line instructions apply.

Burn Name. Provide the name of the planned burn project.

ID #. Provide the ID number assigned by the WDEQ-AQD upon receipt of the registration form.

Daily Burn Information.

Date(s). Enter the date(s) (month/day/year) when burning is expected to occur.

Area. Enter both the maximum possible and most likely estimated acreage for each day. Leave blank or enter "N/A" if burning piles. The burner may not exceed the maximum possible amount.

Pile Volume. Enter both the maximum possible and the most likely estimated pile volume in cubic feet for each day. Leave blank or enter "N/A" if not burning piles. The burner may not exceed the maximum possible amount.

Ventilation Category. Specify under which ventilation conditions the planned burn project will be conducted. If "Fair" or "Poor" is selected, also provide wind direction(s) (i.e., the direction the wind is blowing from) under which the burning will occur and the distance to the nearest population downwind (the direction the wind is blowing toward) in miles. This can be a very limited wind direction such as "SW" or it may be a range such as "S – E" or it can be "all". If the burner plans to burn during "Poor" conditions, for example, night burning due to moisture requirements, a waiver form must be submitted. A waiver form must also be submitted for deviations from the requirements to burn during "Fair" conditions. See the Waiver Instructions below for further information.

Comments. Provide any other comments that might help clarify or explain other entries.

Signature & Date. If submitting this form via fax, please sign and date the form prior to submittal. If the SMP-II Notification Form is submitted electronically, the electronic signature will be attributed to the sender.

STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION

SMP-I Notification Form

*Notification information may be submitted by phone, or fax or e-mail.
 Use of this form is optional.*

CONTACT INFORMATION:

NAME _____ PHONE _____
 ADDRESS _____ FAX _____
 CITY _____ E-MAIL _____
 STATE _____ ZIP _____
 AGENCY/COMPANY (IF APPLICABLE) _____

LOCATION:

COUNTY _____ ELEVATION (FEET) _____
 LEGAL: SECTION _____ TOWNSHIP _____ RANGE _____
 LATITUDE _____ LONGITUDE _____ DATUM _____
 UTM: ZONE _____ EAST _____ NORTH _____ DATUM _____

NEAREST POPULATION: (VOLUNTARY)

DAILY BURN INFORMATION: (VOLUNTARY)

	DATE(S) (MONTH/DAY/YR)	VEGETATION TYPE(S)	AREA (ACRES) Max. Possible	PILE VOL. (CU-FT) Max. Possible
DAY 1				
DAY 2				
DAY 3				
DAY 4				
DAY 5				
DAY 6				
DAY 7				

COMMENTS _____

This form shall be submitted to the WDEQ-AQD no later than one hour prior to ignition.

SIGNATURE _____ **DATE** _____
If SMP-I Notification Form is submitted electronically, the electronic signature will be attributed to the sender.

**STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION**

SMP-II Notification Form

*Notification information may be submitted by phone, or fax or e-mail.
Use of this form is optional.*

BURN NAME _____ **ID #** _____

DAILY BURN INFORMATION:

	DATE(S) (MONTH/DAY/YR)	AREA (ACRES)		PILE VOLUME (CU-FT)	
		Max. Possible	Most Likely	Max. Possible	Most Likely
DAY 1					
DAY 2					
DAY 3					
DAY 4					
DAY 5					
DAY 6					
DAY 7					

VENTILATION CATEGORY: EXCELLENT VERY GOOD GOOD FAIR* POOR*
 * SPECIFY WIND DIRECTION _____ & DISTANCE TO POPULATION (MI) _____

COMMENTS _____

This form shall be submitted to the WDEQ-AQD by 10:00 am one business day prior to ignition.

SIGNATURE _____ **DATE** _____

If SMP-II Notification Form is submitted electronically, the electronic signature will be attributed to the sender.

3. Post Burn Reporting Instructions

Submittal of the Post Burn Reporting Form to WDEQ-AQD is required for all planned burn projects and unplanned fire events that exceed 50 acres. The Post Burn Reporting Form is due from all SMP-I and SMP-II burners no later than six weeks following the completion of the planned burn project. For all unplanned fire events, both managed and suppressed, the form is due no later than December 31st.

The WDEQ-AQD, in cooperation with the Wyoming State Forestry Division, will utilize the tracking mechanism that is already in place for fire incident reporting (i.e., Wyoming Fire Incident Reporting System - WFIRS) to satisfy the WDEQ-AQD post burn reporting requirement for non-federal jurisdictional fire authorities, provided that the non-federal jurisdictional fire authority has submitted the WFIRS information to the Wyoming State Fire Marshal's Office.

Explanation: This information will be used to obtain an accurate amount of emissions actually produced, and enable the WDEQ-AQD to develop emissions inventories.

One Post Burn Reporting Form is submitted for each planned burn project, and the burner is responsible for determining the scope of his/her burn project. A planned burn project is an area that is contiguous and is being treated for the same land management objectives. For example, a farmer plans to burn crop residue from several hundred acres that may occur over several weeks, depending on weather conditions. This is considered one planned burn project (same land management objective for all acreage and on contiguous land); therefore only one Post Burn Reporting Form is needed. Alternatively, a jurisdictional fire authority may have been responsible for several unplanned fire events that exceed 50 acres in a year all geographically separated. Each of these would be considered a separate unplanned fire event, and thus each would require a separate Post Burn Reporting Form.

All information on the Post Burn Reporting Form is required to be filled out, unless otherwise indicated. There may be several options presented; in those cases, choose the appropriate option. This form may be submitted to the WDEQ-AQD by mail, fax, e-mail, or hand delivery.

3.1. SMP-I Post Burn Reporting

Following are line-by-line instructions for filling out the SMP-I Post Burn Reporting Form.

Contact Information. Provide information for the primary contact for this planned burn project; i.e., landowner, burn manager or burn boss. Give name, address, phone number, and if available, fax and e-mail.

Explanation: This enables the WDEQ-AQD to contact the burner if necessary.

Burn Name. Provide the name of the planned burn project.

Explanation: This is to help the WDEQ-AQD identify separate projects by the same burner. The burner assigns the burn name. A planned burn project needs to be contiguous on the landscape and have similar burn objectives. If you do not typically name your burn, a last name or some other descriptor will suffice, as long as each planned burn project name is unique.

ID #. Leave the ID number space blank.

Explanation: The ID number will be assigned by the WDEQ-AQD. This number will be unique to a planned burn project and will be used to identify and track separate projects by the same burner.

Location. Provide the name of the county in which the burning occurred. If the planned burn project overlaps more than one, provide the county in which ignition took place. Provide the average elevation of the planned burn project. Provide at least one locator: latitude/longitude in decimal degrees; Universal Transverse Mercator (UTM) including the zone, easting, and northing; or legal including Section, Township, and Range. For latitude/longitude and UTM, please provide the reference datum (e.g., NAD27, NAD83, WGS84). If unable to determine this information, the following internet sites may prove helpful Graphical Locator <http://www.esg.montana.edu/gl/> and TopoZone <http://www.topozone.com/>.

Explanation: This information allows the WDEQ-AQD to plot all planned burn projects on a map, assisting with the analysis of burning across the state and in a given airshed.

Land Ownership. Specify the appropriate land ownership: federal, state, municipal, or private. For multiple land ownership, designate the primary ownership as 1, secondary as 2, and so on (e.g., state 1, private 2).

Explanation: The land ownership will help WDEQ-AQD characterize burning across the state.

Nearest Population. Provide the distance (in miles) to the nearest population(s) from the planned burn project.

Explanation: Providing this information makes the burner aware of the people and places that could have been affected by the planned burn project, and indicates to the WDEQ-AQD to check for compliance with additional requirements to be satisfied by the burner, which is public notification.

Public Information.

Explanation: Providing this information makes the WDEQ-AQD aware of the jurisdictional fire authority(ies) notified and public notification conducted prior to ignition of the planned burn project.

Jurisdictional Fire Authority(ies). Provide the name of the jurisdictional fire authority(ies) you notified and the date and time the notification(s) took place.

Public Notification. If a population(s) was within a 0.5-mile radius of the planned burn project, provide the method(s) of public notification that was used and the date(s) on which it took place. Specify if the population(s) within a 0.5-mile radius of the planned burn project was in an area of low population density (average one dwelling unit per ten acres), in which case no public notification is required.

Restoration Burn or Maintenance Burn. (For Grassland, Shrub Land and Forests ONLY)

Specify if the planned burn project helped **restore** the land to more healthy conditions, or if it helped **maintain** existing healthy conditions. For clarification of the difference between “restoration” burn projects and “maintenance” burn projects, see the definitions as footnoted below.¹⁵

Explanation: This information helps the WDEQ-AQD characterize burning across the state.

Daily Burn Information.

Explanation: This allows the WDEQ-AQD to characterize burn types and sizes in specific time periods across the state as well as accurately as possible the actual emissions produced. It is to each burner’s advantage to make the best estimates possible of acreage and pile volume burned, fuel loading, and percent consumption, as this will drive the amount of emissions estimated.

Date(s). Enter each date(s) (month/day/year) when burning occurred, from ignition to completion.

Vegetation Type(s). For each date, enter the primary vegetation type burned and secondary vegetation type burned, if applicable. A list of vegetation types is provided on the Post Burn Reporting Form.

Pile Volume. For each date and primary and/or secondary vegetation type, enter in cubic feet the total pile volume burned. This does not apply to burning acreage, fence lines or ditches.

Acres. For each date and primary and/or secondary vegetation type burned, enter blackened acres. Be as accurate as possible and only enter **blackened** acres, that is, the actual areas that burned, not the total project acres. For fence line or ditch burns, identify the length (miles) and width (feet) of vegetation burned. This does not apply to pile burning.

Loading. For each date and primary and/or secondary vegetation type burned, enter the best estimate of total fuel loading in tons per acre if burning acreage. This does not apply to pile burning.

Percent Consumption. For each date and primary and/or secondary vegetation type, enter the best estimate of the percent consumed. This is the percentage of vegetation removed by the fire, not the actual acreage blackened by fire. For example, a rangeland burn includes short grass prairie and sagebrush, and all of the grass is burned while only half of the sagebrush remains. In this instance 100% would be entered for short grasses and 50% would be entered for sagebrush. This does not apply to pile burning.

¹⁵ Maintenance Burns – A prescribed fire or unplanned fire under management, in an ecosystem that is currently in an ecologically functional and fire resilient condition, which is utilized to mimic the natural role of fire.

Restoration Burns – The re-establishment of natural vegetation and fire-resilient condition accomplished through the use of prescribed fire or unplanned fire under management to reduce unwanted and/or unnatural levels of vegetation.

Smoke Dispersion.

Explanation: Burning under certain atmospheric conditions promotes better smoke dispersion and lessens smoke impacts. This information enables WDEQ-AQD to determine if planned burn projects took place under appropriately protective conditions.

Waiver – Date Approved. If the time of day, wind speed, wind direction, and/or distance to population were not within the specified requirements, provide the date the waiver was approved. See the Waiver Instructions below for further information.

Date(s). Enter each date(s) (month/day/year) when burning occurred, from ignition to completion.

Time of Day. For each date, enter what time of day the planned burn project took place.

Wind Speed. For each date, enter the speed of the wind during the burn project.

Wind Direction. For each date, enter the direction of the wind during the burn project. The wind direction is the direction the wind is blowing from and can be a very limited wind direction such as “SW” or it may be a range such as “S – E” or it can be “all”.

Distance to Population. For each date, enter the distance to the nearest population downwind (the direction the wind is blowing toward) in miles.

Ventilation Category Option. Those SMP-I burners with the knowledge and expertise that chose to follow the SMP-II smoke dispersion requirement, in lieu of the SMP-I smoke dispersion requirement, should for each date, enter the ventilation conditions under which the planned burn project was conducted (i.e., Excellent, Very Good, Good, Fair, Poor). If “Fair” or “Poor” is selected, wind direction and distance to population must also be entered.

Air Quality Monitoring. Specify how often the planned burn project was attended and observed. If not at all times, provide the number of times and frequency.

Explanation: Attending and observing the planned burn project makes the burner aware of impacts resulting from the burn project, and providing this information enables the WDEQ-AQD to verify what impacts were monitored by the burner.

Option to Attend and Observe. For those SMP-I burners with the knowledge and expertise, the requirement to attend and observe the planned burn project may be replaced with the SMP-II requirement of conducting and documenting visual monitoring. Specify that visual monitoring was conducted for the planned burn project as well as what documentation of the visual monitoring is submitted with the Post Burn Reporting Form. Documentation of visual monitoring includes copies of the Visual Monitoring Log, photos/videos, and/or the Photo / Video Log.

Smoke Management Education. (Voluntary) For review of the WDEQ-AQD educational material, provide the date reviewed. For other training programs, provide the name of the program and the date completed.

Explanation: By participating in an education program the WDEQ-AQD expects responsible jurisdictional fire authorities to become more aware of the smoke produced, the impacts of the smoke, and the ways to minimize the potential emissions and impacts. Although smoke management education is not a requirement for SMP-I burners, they are encouraged to voluntarily review the educational material provided by the WDEQ-AQD so as to enhance their understanding of the protection of air quality through smoke management and to promote environmentally responsible burning practices.

Emission Reduction Techniques. (Voluntary) For the primary vegetation type burned and secondary vegetation type burned, if applicable, enter the vegetation type and each emission reduction technique (ERT) that was utilized as well as the number of acres on which the ERT was used. For piles, which are an ERT, enter the acreage from which the piled material originated. ERT acres may add up to more than total project acreage. A list of vegetation types and ERTs are provided on the Post Burn Reporting Form.

Explanation: This information will enable WDEQ-AQD to identify the most commonly used ERTs to reduce emissions in Wyoming and to estimate the total emissions reduced from all ERTs used for each planned burn project. This element is not required for SMP-I burners. However, the use of emission reduction techniques is generally a part of best burning practices and the use of them wherever possible is encouraged of all burners by the WDEQ-AQD.

Comments. Provide any other comments that might help clarify or explain other entries.

Signature & Date. If submitting this form via mail or fax, please sign and date the form prior to submittal. If the SMP-I Post Burn Reporting Form is submitted electronically, the electronic signature will be attributed to the sender.

3.2. SMP-II Post Burn Reporting

Following are line-by-line instructions for filling out the SMP-II Post Burn Reporting Form.

Burn Name. Provide the name of the planned burn project.

ID #. Provide the ID number assigned by the WDEQ-AQD upon receipt of the registration form.

Public Information.

Explanation: Providing this information makes the WDEQ-AQD aware of the jurisdictional fire authority(ies) notified and public notification conducted prior to ignition of the planned burn project.

Jurisdictional Fire Authority(ies). Provide the name of the jurisdictional fire authority(ies) you notified and the date and time the notification(s) took place.

Public Notification. If a population(s) was within a 10-mile radius of the planned burn project, provide the method(s) of public notification that was used and the date(s) on which it took place.

Daily Burn Information.

Explanation: This allows the WDEQ-AQD to characterize burn types and sizes in specific time periods across the state as well as accurately as possible the actual emissions produced. It is to each burner's advantage to make the best estimates possible of acreage and pile volume burned, fuel loading, and percent consumption, as this will drive the amount of emissions estimated.

Date(s). Enter each date(s) (month/day/year) when burning occurred, from ignition to completion.

Vegetation Type(s). For each date, enter the primary vegetation type burned and secondary vegetation type burned, if applicable. A list of vegetation types is provided on the Post Burn Reporting Form.

Pile Volume. For each date and primary and/or secondary vegetation type, enter in cubic feet the total pile volume burned. This does not apply to burning acreage, fence lines or ditches.

Acres. For each date and primary and/or secondary vegetation type burned, enter blackened acres. Be as accurate as possible and only enter **blackened** acres, that is, the actual areas that burned, not the total project acres. For fence line or ditch burns, identify the length (miles) and width (feet) of vegetation burned. This does not apply to pile burning.

Loading. For each date and primary and/or secondary vegetation type burned, enter the best estimate of total fuel loading in tons per acre if burning acreage. This does not apply to pile burning.

Percent Consumption. For each date and primary and/or secondary vegetation type, enter the best estimate of the percent consumed. This is the percentage of vegetation removed by the fire, not the actual acreage blackened by fire. For example, a rangeland burn includes short grass prairie and sagebrush, and all of the grass is burned while only half of the sagebrush remains. In this instance 100% would be entered for short grasses and 50% would be entered for sagebrush. This does not apply to pile burning.

Emission Reduction Techniques. For the primary vegetation type burned and secondary vegetation type burned, if applicable, enter the vegetation type and each emission reduction technique (ERT) that was utilized as well as the number of acres on which the ERT was used. For piles, which are an ERT, enter the acreage from which the piled material originated. ERT acres may add up to more than total project acreage. A list of vegetation types and ERTs are provided on the Post Burn Reporting Form. If no ERTs were used, indicate the date the waiver was approved. See the Waiver Instructions below for further information.

Explanation: This information will enable WDEQ-AQD to identify the most commonly used ERTs to reduce emissions in Wyoming and to estimate the total emissions reduced from all ERTs used for each planned burn project.

Smoke Dispersion.

Explanation: Burning under certain ventilation categories promotes better smoke dispersion and reduces smoke impacts. This information enables WDEQ-AQD to determine if planned burn projects took place under appropriately protective conditions, and if not, that WDEQ-AQD should check for compliance with the additional protective requirements (e.g., monitoring.)

Waiver – Date Approved. If the burner burned during “Poor” conditions or deviated from the requirements to burn during “Fair” conditions, specify the date the waiver was approved. See the Waiver Instructions below for further information.

Date(s). Enter each date(s) (month/day/year) when burning occurred, from ignition to completion.

Ventilation Category. For each date, enter under which ventilation conditions the planned burn project was conducted (i.e., Excellent, Very Good, Good, Fair, Poor).

***Specify.** If “Fair*” or “Poor*” is selected, wind direction and distance to population must also be entered. Enter wind direction(s) (i.e., the direction the wind is blowing from) under which the burning occurred and the distance to the nearest population downwind (the direction the wind is blowing toward) in miles. The wind direction can be very limited such as “SW” or it may be a range such as “S – E” or it can be “all”.

Air Quality Monitoring. Specify what monitoring was conducted for the planned burn project as well as what documentation of the visual monitoring and air quality or visibility monitoring, if applicable, is submitted with the Post Burn Reporting Form. Documentation of visual monitoring includes copies of the Visual Monitoring Log, photos/videos, and/or the Photo / Video Log. Documentation of air quality or visibility monitoring includes the type of monitor, constituents monitored, monitoring methodology, location, monitoring period and resulting data.

Explanation: Providing this information makes the burner aware of impacts resulting from the planned burn project, and enables the WDEQ-AQD to verify what impacts were monitored by the burner.

Comments. Provide any other comments that might help clarify or explain other entries.

Signature & Date. If submitting this form via mail or fax, please sign and date the form prior to submittal. If the SMP-II Post Burn Reporting Form is submitted electronically, the electronic signature will be attributed to the sender.

3.3. Unplanned Fire Post Burn Reporting

The WDEQ-AQD will utilize the Wyoming Fire Incident Reporting System (WFIRS) to satisfy the WDEQ-AQD post burn reporting requirement for non-federal jurisdictional fire authorities, provided that the non-federal jurisdictional fire authority has submitted the WFIRS information to the Wyoming State Fire Marshal’s Office.

Following are line-by-line instructions for filling out the Unplanned Fire Post Burn Reporting Form.

Contact Information. Provide information for the primary contact for this unplanned fire event; i.e., responsible jurisdictional fire authority. Give name, address, phone number, and if available, fax and e-mail.

Explanation: This enables the WDEQ-AQD to contact the responsible jurisdictional fire authority if necessary.

Volunteer Fire Organization. Specify if the jurisdictional fire authority responsible for the unplanned fire event was a volunteer fire organization.

Explanation: This information indicates to the WDEQ-AQD to check for compliance with the applicable requirements.

Burn Name. Provide the name of the unplanned fire event.

Explanation: This is to help the WDEQ-AQD identify separate unplanned fire events with the same jurisdictional fire authority.

ID #. Leave the ID number space blank.

Explanation: The ID number will be assigned by the WDEQ-AQD. This number will be unique to an unplanned fire event and will be used to identify and track separate unplanned fire events with the same jurisdictional fire authority.

Location. Provide the name of the county in which the unplanned fire event occurred. If the unplanned fire event overlaps more than one, provide the county in which ignition took place. Provide the average elevation of the unplanned fire event. Provide at least one locator: latitude/longitude in decimal degrees; Universal Transverse Mercator (UTM) including the zone, easting, and northing; or legal including Section, Township, and Range. For latitude/longitude and UTM, please provide the reference datum (e.g., NAD27, NAD83, WGS84). If unable to determine this information, the following internet sites may prove helpful Graphical Locator <http://www.esg.montana.edu/gl/> and TopoZone <http://www.topozone.com/>.

Explanation: This information allows the WDEQ-AQD to plot all unplanned fire events on a map, assisting with the analysis of burning across the state and in a given airshed.

Land Ownership. Specify the appropriate land ownership: federal, state, municipal, or private. For multiple land ownership, designate the primary ownership as 1, secondary as 2, and so on (e.g., state 1, private 2).

Explanation: The land ownership will help WDEQ-AQD characterize burning across the state.

Sensitive Receptors. Specify if there was a population(s) or Nonattainment area(s) within a 10-mile radius of the unplanned fire event, or if there were Class-I areas within 30 miles.

Explanation: Providing this information makes the responsible jurisdictional fire authority aware of the people and places that could have been affected by the unplanned fire event, and indicates to the WDEQ-AQD to check for compliance with the additional protective requirements, that is monitoring and public notification.

Public Information.

Explanation: Providing this information makes the WDEQ-AQD aware of the jurisdictional fire authority(ies) notified and public notification conducted for the unplanned fire event.

Jurisdictional Fire Authority(ies). Provide the name of the jurisdictional fire authority(ies) you notified and the date and time the notification(s) took place. Jurisdictional Fire Authority information is voluntary for volunteer fire organizations.

Public Notification. If a population(s) was within a 10-mile radius of the unplanned fire event, provide the method(s) of public notification that was used and the date(s) on which it took place. Public Notification information is voluntary for volunteer fire organizations.

Management Response. Specify if the appropriate management response for the unplanned fire event was suppression or management to accomplish specific pre-stated management objectives in a pre-defined geographic area (unplanned fire under management). For unplanned fire under management ONLY, specify if the unplanned fire event helped **restore** the land to more healthy conditions, or if it helped **maintain** existing healthy conditions. For clarification of the

difference between “restoration” unplanned fire events and “maintenance” unplanned fire events, see the definitions as footnoted below.¹⁶

Explanation: This information helps the WDEQ-AQD characterize burning across the state and indicates to the WDEQ-AQD to check for compliance with the two additional requirements for unplanned fire under management.

Daily Burn Information.

Explanation: This allows the WDEQ-AQD to characterize burn types and sizes in specific time periods across the state as well as accurately as possible the actual emissions produced. It is to the advantage of each responsible jurisdictional fire authority to make the best estimates possible of acreage burned, and fuel loading, as this will drive the amount of emissions estimated.

Date(s). Enter each date(s) (month/day/year) when burning occurred, from ignition to completion.

Vegetation Type(s). For each date, enter the primary vegetation type burned and secondary vegetation type burned, if applicable. A list of vegetation types is provided on the Post Burn Reporting Form. The National Fire Danger Rating System (NFDRS) vegetation types may also be used.

Acres. For each date and primary and/or secondary vegetation type burned, enter blackened acres. Be as accurate as possible and only enter **blackened** acres, that is, the actual areas that burned, not the total unplanned fire event acres.

Loading. For each date and primary and/or secondary vegetation type burned, enter the best estimate of total fuel loading in tons per acre if burning acreage. The National Fire Danger Rating System (NFDRS) fuel loadings may be used.

Air Quality Monitoring. Specify what monitoring was conducted for the unplanned fire event as well as what documentation of the visual monitoring and air quality or visibility monitoring, if applicable, is submitted with the Post Burn Reporting Form. Documentation of visual monitoring includes copies of the Visual Monitoring Log, photos/videos, and/or the Photo / Video Log. Documentation of air quality or visibility monitoring includes the type of monitor, constituents monitored, monitoring methodology, location, monitoring period and resulting data. Air Quality Monitoring information is voluntary for volunteer fire organizations.

Explanation: Providing this information makes the responsible jurisdictional fire authority aware of impacts resulting from the unplanned fire event, and enables the WDEQ-AQD to verify what impacts were monitored by the responsible jurisdictional fire authority.

¹⁶ Maintenance Burns – A prescribed fire or unplanned fire under management, in an ecosystem that is currently in an ecologically functional and fire resilient condition, which is utilized to mimic the natural role of fire.

Restoration Burns – The re-establishment of natural vegetation and fire-resilient condition accomplished through the use of prescribed fire or unplanned fire under management to reduce unwanted and/or unnatural levels of vegetation.

Smoke Management Education. (For Unplanned Fire Under Management ONLY) For review of the WDEQ-AQD educational material, provide the date reviewed. For other training programs, provide the name of the program and the date completed. Smoke Management Education information is voluntary for volunteer fire organizations.

Explanation: By participating in an education program the WDEQ-AQD expects responsible jurisdictional fire authorities to become more aware of the smoke produced, the impacts of the smoke, and the ways to minimize the potential emissions and impacts.

Comments. Provide any other comments that might help clarify or explain other entries.

Signature & Date. If submitting this form via mail or fax, please sign and date the form prior to submittal. If the Unplanned Fire Post Burn Reporting Form is submitted electronically, the electronic signature will be attributed to the sender.

**STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION**

SMP-I Post Burn Reporting Form

CONTACT INFORMATION:

NAME _____ PHONE _____
 ADDRESS _____ FAX _____
 CITY _____ E-MAIL _____
 STATE _____ ZIP _____
 AGENCY/COMPANY (IF APPLICABLE) _____

BURN NAME _____ **ID #** *To Be Assigned by WDEQ*

LOCATION: COUNTY _____ ELEVATION (FEET) _____
 LEGAL: SECTION _____ TOWNSHIP _____ RANGE _____
 LATITUDE _____ LONGITUDE _____ DATUM _____
 UTM: ZONE _____ EAST _____ NORTH _____ DATUM _____

LAND OWNERSHIP: FEDERAL STATE MUNICIPAL PRIVATE

NEAREST POPULATION _____

PUBLIC INFORMATION:

JURISDICTIONAL FIRE NAME _____ DATE/TIME _____
AUTHORITY(IES): NAME _____ DATE/TIME _____
PUBLIC DATE _____

NOTIFICATION: AREA OF LOW POPULATION DENSITY WITHIN 0.5-MILE RADIUS

FOR FOREST, GRASSLAND, & SHRUB LAND ONLY: RESTORATION MAINTENANCE

DAILY BURN INFORMATION:

DATE (MONTH/DAY/YR)	VEGETATION TYPE (SEE LIST)	PILE VOL. (CU-FT)	ACRES	LOADING (TONS/ACRE)	PERCENT CONSUMPTION

SMOKE DISPERSION:

WAIVER - DATE APPROVED _____

DATE (MONTH/DAY/YR)	TIME OF DAY	WIND SPEED	WIND DIRECTION	DISTANCE TO POPULATION	VENT. CAT. (OPTION)

AIR QUALITY MONITORING:

ATTENDED AND OBSERVED PERIODICALLY, SPECIFY:
 NUMBER OF TIMES _____ FREQUENCY _____

ATTENDED AND OBSERVED AT ALL TIMES

OPTION TO ATTEND AND OBSERVE: CONDUCTED VISUAL MONITORING, IDENTIFY:
 DOCUMENTATION ATTACHED _____

SMOKE MANAGEMENT EDUCATION: (VOLUNTARY)

WDEQ-AQD SMOKE MANAGEMENT EDUCATION MATERIAL REVIEWED ON _____
 TRAINING PROGRAM COMPLETED ON _____

EMISSION REDUCTION TECHNIQUES: (VOLUNTARY)

VEGETATION TYPE (SEE LIST)	EMISSION REDUCTION TECHNIQUE(S) (SEE LIST)	ACRES

COMMENTS _____

This form shall be submitted no later than six weeks following planned burn project completion.

SIGNATURE _____ **DATE** _____

If SMP-1 Post Burn Reporting Form is submitted electronically, the electronic signature will be attributed to the sender.

VEGETATION TYPE LIST

Lodgepole Pine / Fir: little dead & down Forest: heavy dead & down with brush Thinning Unit: not piled with red needles Logging Slash: mod. accumulations Logging Slash: clearcut Logging Slash Piles: hand Logging Slash Piles: tractor, clean Logging Slash Piles: tractor, dirty Logging Slash Piles: landing	Ponderosa Pine: open canopy Ponderosa Pine: closed canopy Juniper Sagebrush Mountain Brush Short Grasses Tall Grasses Weeds	Barley Corn Hay Oats Seeds: Alfalfa Seeds: Grass Wheat CRP Ditches
--	--	--

EMISSION REDUCTION TECHNIQUE LIST

<u>Reduce Area Burned</u> Burn Concentrations Isolate Fuels Mosaic Burning Alternate Year Burning	<u>Reduce Fuel Load</u> Mechanical Removal Mechanical Processing Firewood Sales Biomass: Electric Generation Biomass Utilization Ungulates Incorporation into Soil	<u>Increase Combustion Efficiency</u> Burn Piles or Windrows Backing Fires Dry Conditions Rapid Mop-Up Residue Moisture Air Curtain Incinerators (WAQSR Ch 6, Sec 2 permit required) Aerial Ignition / Mass Ignition Into-the-Wind Striplighting Mobile Field Sanitizer Maintaining Fire Line Intensity
<u>Reduce Fuel Production</u> Chemical Treatments Site Conversion Land Use Change	<u>Reduce Fuel Consumption</u> High Moisture in Large Woody Fuels Moist Litter and/or Duff Burn before Precipitation Burn before Large Fuel Cures Burn when Green	Other (specify)
<u>New Fuels</u> Burn before Litter Fall Burn before Green-Up		

AIR QUALITY MONITORING:

- CONDUCTED VISUAL MONITORING, IDENTIFY:
DOCUMENTATION ATTACHED _____
- CONDUCTED AMBIENT AIR QUALITY MONITORING, IDENTIFY:
DOCUMENTATION ATTACHED _____
- CONDUCTED VISIBILITY MONITORING, IDENTIFY:
DOCUMENTATION ATTACHED _____

COMMENTS _____

This form shall be submitted no later than six weeks following planned burn project completion.

SIGNATURE _____ **DATE** _____

If SMP-II Post Burn Reporting Form is submitted electronically, the electronic signature will be attributed to the sender.

VEGETATION TYPE LIST

Lodgepole Pine / Fir: little dead & down Forest: heavy dead & down with brush Thinning Unit: not piled with red needles Logging Slash: mod. accumulations Logging Slash: clearcut Logging Slash Piles: hand Logging Slash Piles: tractor, clean Logging Slash Piles: tractor, dirty Logging Slash Piles: landing	Ponderosa Pine: open canopy Ponderosa Pine: closed canopy Juniper Sagebrush Mountain Brush Short Grasses Tall Grasses Weeds	Barley Corn Hay Oats Seeds: Alfalfa Seeds: Grass Wheat CRP Ditches
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EMISSION REDUCTION TECHNIQUE LIST

<u>Reduce Area Burned</u> Burn Concentrations Isolate Fuels Mosaic Burning Alternate Year Burning	<u>Reduce Fuel Load</u> Mechanical Removal Mechanical Processing Firewood Sales Biomass: Electric Generation Biomass Utilization Ungulates Incorporation into Soil	<u>Increase Combustion Efficiency</u> Burn Piles or Windrows Backing Fires Dry Conditions Rapid Mop-Up Residue Moisture Air Curtain Incinerators (WAQSR Ch 6, Sec 2 permit required) Aerial Ignition / Mass Ignition Into-the-Wind Striplighting Mobile Field Sanitizer Maintaining Fire Line Intensity
<u>Reduce Fuel Production</u> Chemical Treatments Site Conversion Land Use Change	<u>Reduce Fuel Consumption</u> High Moisture in Large Woody Fuels Moist Litter and/or Duff Burn before Precipitation Burn before Large Fuel Cures Burn when Green	Other (specify)
<u>New Fuels</u> Burn before Litter Fall Burn before Green-Up		

AIR QUALITY MONITORING:

- CONDUCTED VISUAL MONITORING, IDENTIFY:
DOCUMENTATION ATTACHED _____
- CONDUCTED AMBIENT AIR QUALITY MONITORING, IDENTIFY:
DOCUMENTATION ATTACHED _____
- CONDUCTED VISIBILITY MONITORING, IDENTIFY:
DOCUMENTATION ATTACHED _____

SMOKE MANAGEMENT EDUCATION: (FOR UNPLANNED FIRE UNDER MANAGEMENT ONLY)

WDEQ-AQD SMOKE MANAGEMENT EDUCATION MATERIAL REVIEWED ON _____
 _____ TRAINING PROGRAM COMPLETED ON _____

COMMENTS _____

This form shall be submitted to the WDEQ-AQD no later than December 31.

SIGNATURE _____ **DATE** _____

If Unplanned Fire Post Burn Reporting Form is submitted electronically, the electronic signature will be attributed to the sender.

VEGETATION TYPE LIST

Lodgepole Pine / Fir: little dead & down Forest: heavy dead & down with brush Thinning Unit: not piled with red needles Logging Slash: mod. accumulations Logging Slash: clearcut Logging Slash Piles: hand Logging Slash Piles: tractor, clean Logging Slash Piles: tractor, dirty Logging Slash Piles: landing	Ponderosa Pine: open canopy Ponderosa Pine: closed canopy Juniper Sagebrush Mountain Brush Short Grasses Tall Grasses Weeds	Barley Corn Hay Oats Seeds: Alfalfa Seeds: Grass Wheat CRP Ditches
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4. Long-Term Planning Instructions

Burners and/or land managers whose total planned burn projects in a year are projected to generate greater than 100 tons of PM₁₀ emissions are required to submit a written report on the Long-Term Planning Form provided by the WDEQ-AQD no later than January 31 every third year starting in 2005 (i.e., 2005, 2008, 2011, 2014, etc.). The long-term planning information collected will only be used to facilitate the WDEQ-AQD's planning efforts, and not to limit in future years the number or size of planned burn projects or enforce the planned use of alternatives to burning.

Those burners that fall under the 100 tons per year PM₁₀ emissions threshold are not required to submit a written long-term planning report. Future burn levels for burners below the 100 tons per year PM₁₀ emissions threshold will be approximated by the WDEQ-AQD based on completed Post Burn Reporting Forms.

Following are line-by-line instructions for filling out the Long-Term Planning Form.

Contact Information. Provide information for the primary contact for this long-term planning information. Give name, address, phone number, and if available, fax and e-mail.

Explanation: This enables the WDEQ-AQD to contact the burner and/or land manager if necessary.

Report Name. Provide the name of the long-term planning report, including the year submitted (i.e., 2005, 2008, 2011, 2014, etc.).

Explanation: This is to help the WDEQ-AQD identify separate reports by the same burner and/or land manager. The burner and/or land manager assigns the report name.

ID #. Leave the ID number space blank.

Explanation: The ID number will be assigned by the WDEQ-AQD upon receipt of the form. This number will be unique to the report to further help the WDEQ-AQD identify separate reports by the same burner and/or land manager.

Burn Estimates for Next Three Years.

Explanation: The information provided will enable the WDEQ-AQD to consider fire projection information (i.e., future burn levels for the next three years) and the anticipated effect on visibility in planning and when developing long-term strategies.

Time of Burn. Enter the month(s) of the year and the year the planned burn project is estimated to take place. For example, if it could be either a single month or a range of months (i.e., Dec. – Feb., Mar. – May, June – Aug., Sept. – Nov.).

Location. Enter the name of the county in which the burning will likely occur. If the planned burn project overlaps more than one, enter the county in which ignition will likely take place. Enter latitude and longitude in decimal degrees, if available.

Vegetation Type. Enter the primary vegetation type burned and secondary vegetation type burned, if applicable.

Type of Burn. Enter the predominant configuration of the fuel burned (e.g., pile, windrow, broadcast, underburn).

Acres. Enter the estimated acreage to be burned.

Pile Volume. Enter in cubic feet the estimated total pile volume to be burned.

Alternative to Burning Considered and Utilized Previous Three Years.

Explanation: The information provided will enable the WDEQ-AQD to identify the most commonly used alternatives to burning in Wyoming and report on emission reductions achieved in the previous three years as a result of the use of alternatives to burning.

Year. Enter the year alternative to burning was utilized.

Location. Enter the name of the county in which the alternative to burning was used. If the alternative to burning overlaps more than one, enter the county in which the majority of the alternative to burning took place. Enter latitude and longitude in decimal degrees, if available.

Vegetation Type. Enter the primary vegetation type and secondary vegetation type, if applicable, treated by the alternative to burning.

Alternative to Burning. Enter the alternative to burning that was utilized.

Acres. Enter the number of acres on which the alternative to burning was used.

Alternative to Burning Planned Next Three Years.

Explanation: The information provided will enable the WDEQ-AQD to identify and report on emission reductions planned in the next three years as a result of the use of alternatives to burning.

Year. Enter the year alternative to burning will be utilized.

Location. Enter the name of the county in which the alternative to burning will be used. If the alternative to burning overlaps more than one, enter the county in which the majority of the alternative to burning will take place. Enter latitude and longitude in decimal degrees, if available.

Vegetation Type. Enter the primary vegetation type and secondary vegetation type, if applicable, to be treated by the alternative to burning.

Alternative to Burning. Enter the alternative to burning that will be utilized.

Acres. Enter the number of acres on which the alternative to burning will be used.

Comments. Provide any other comments that might help clarify or explain other entries.

Signature & Date. If submitting this form via mail or fax, please sign and date the form prior to submittal. If the Long-Term Planning Form is submitted electronically, the electronic signature will be attributed to the sender.

ALTERNATIVES TO BURNING CONSIDERED AND UTILIZED PREVIOUS THREE YEARS:

YEAR	LOCATION			VEGETATION TYPE	ALTERNATIVE TO BURNING	ACRES
	COUNTY	LATITUDE	LONGITUDE			

ALTERNATIVES TO BURNING PLANNED NEXT THREE YEARS:

YEAR	LOCATION			VEGETATION TYPE	ALTERNATIVE TO BURNING	ACRES
	COUNTY	LATITUDE	LONGITUDE			

COMMENTS _____

This form shall be submitted to the WDEQ-AQD every third year starting in 2005 by January 31.

SIGNATURE _____

DATE _____

If Long-Term Planning Form is submitted electronically, the electronic signature will be attributed to the sender.

5. Waiver Instructions

Waivers may be requested for the emission reduction technique requirement (applicable to SMP-II only) and for smoke dispersion requirements (time of day, wind direction, wind speed, distance to a population, and ventilation category). Several examples follow.

- SMP-II Emission Reduction Technique Waiver Example: Implementation of at least one emission reduction technique may not be feasible when the burn prescription and resource needs come together. For example, when reducing a thick loading of litter/pine needles, good consumption is needed to open up mineral soils resulting in the smoldering and glowing phases producing a lot of particulate matter that could not be controlled by the use of an emission reduction technique if resource goals are to be achieved.
- SMP-I Smoke Dispersion Waiver Example: To comply with a burn restriction issued by the county indicating that burning is only allowed during the nighttime hours, an SMP-I burner will need to apply for a waiver from the WDEQ-AQD to also be in compliance with the Chapter 10, Section 4 requirements. In this instance, the request is for a waiver from the daytime hours requirement and the circumstances that require nighttime burning should be stated to be the counties' burn restriction that only allows burning during the nighttime hours.
- SMP-II Smoke Dispersion Waiver Example: There may be specific needs requiring a SMP-II burner to burn under "Poor" ventilation conditions. For example, night burning where there is a minimal mixing height and thus poor dispersion. The SMP-II burner should request a waiver from the ventilation category requirement and state the circumstances that require nighttime burning such as moisture needs that can only be met during the nighttime hours when dispersion is poor.

If a burner anticipates the need for a waiver, a waiver request should be submitted in advance of ignition, outlining the reasons that a waiver is justified as specified below.

- SMP-II Emission Reduction Technique Waiver Submittal: The burner may request a waiver of this requirement from the WDEQ-AQD with the completed Registration Form, i.e., by January 31st or at least two weeks prior to the planned ignition of the burn project.
- SMP-I & SMP-II Smoke Dispersion Waiver Submittal: The burner may request a waiver of any part of these requirements from the WDEQ-AQD no later than 10:00 a.m. one business day prior to the planned ignition of the burn project. The waiver submittal timeframe, in this case, is set to accommodate the limited time for assessing meteorological conditions.

Explanation: This information allows WDEQ-AQD to evaluate the request and either issue the waiver, issue the waiver with conditions, or deny the waiver.

5.1. SMP-II Emission Reduction Technique Waiver

Following are line-by-line instructions for filling out the SMP-II Emission Reduction Technique Waiver Form.

Burn Name. Provide the name of the planned burn project.

ID #. If this form is submitted along with the Registration Form, leave the ID number blank and it will be assigned by the WDEQ-AQD. If this form is submitted after the WDEQ-AQD has assigned the ID number, upon receipt of the registration form, provide the ID number.

Nearest Population. Provide the distance (in miles) to the nearest population(s) from the planned burn project.

Explanation: Providing this information makes the burner and WDEQ-AQD aware of the people and places that could be affected by the planned burn project.

Daily Burn Information.

Explanation: This information allows WDEQ-AQD to as accurately as possible estimate the emissions to be produced.

Date(s). Enter the date(s) (month/day/year) when burning is expected to occur.

Vegetation Type(s). Enter the vegetation type(s) of the burn.

Area. Enter both the maximum possible and most likely estimated acreage for each day. Leave blank or enter "N/A" if burning piles.

Pile Volume. Enter both the maximum possible and the most likely estimated pile volume in cubic feet for each day. Leave blank or enter "N/A" if not burning piles.

Waiver Request. As the demonstration that a waiver should be granted from the requirements of Chapter 10, Section 4(g)(i)(C), state the circumstances that require burning without implementing a minimum of one emission reduction technique, as well as all feasibility considerations that are applicable. See the list of Emission Reduction Techniques as well as a list of Feasibility Considerations included in the Resource Material.

Comments. Provide any other comments that might help clarify or explain other entries or identify any additional information submitted in support of a SMP-II Emission Reduction Technique Waiver request.

Signature & Date. If submitting this form via fax, please sign and date the form prior to submittal. If the SMP-II Emission Reduction Technique Waiver Form is submitted electronically, the electronic signature will be attributed to the sender.

5.2. SMP-I Smoke Dispersion Waiver

Following are line-by-line instructions for filling out the SMP-I Smoke Dispersion Waiver Form.

Contact Information. Provide information for the primary contact for this planned burn project; i.e., landowner, burn manager or burn boss. Give name, address, 24-hour phone number, and if available, fax and e-mail.

Explanation: This enables the WDEQ-AQD to contact the burner if necessary.

Burn Name. Provide the name of the planned burn project.

Explanation: This is to help the WDEQ-AQD identify separate projects by the same burner. The burner assigns the burn name. A planned burn project needs to be contiguous on the landscape and have similar burn objectives. If you do not typically name your burn, a last name or some other descriptor will suffice, as long as each planned burn project name is unique.

ID #. Leave the ID number space blank.

Explanation: The ID number will be assigned by the WDEQ-AQD. This number will be unique to a planned burn project and will be used to identify and track separate projects by the same burner.

Location. Provide the name of the county in which the burning will occur. If the planned burn project overlaps more than one, provide the county in which ignition will take place. Provide the average elevation of the planned burn project. Provide at least one locator: latitude/longitude in decimal degrees; Universal Transverse Mercator (UTM) including the zone, easting, and northing; or legal including Section, Township, and Range. For latitude/longitude and UTM, please provide the reference datum (e.g., NAD27, NAD83, WGS84). If unable to determine this information, the following internet sites may prove helpful Graphical Locator <http://www.esg.montana.edu/gl/> and TopoZone <http://www.topozone.com/>.

Explanation: This information allows the WDEQ-AQD to plot all planned burn projects on a map, assisting with the analysis of burning across the state and in a given airshed.

Nearest Population. Indicate the distance (in miles) to the nearest population(s) from the planned burn project.

Explanation: Providing this information makes the burner and WDEQ-AQD aware of the people and places that could be affected by the planned burn project.

Daily Burn Information.

Explanation: This information allows WDEQ-AQD to as accurately as possible estimate the emissions to be produced.

Date(s). Enter the date(s) (month/day/year) when burning is expected to occur.

Vegetation Type(s). Enter the vegetation type(s) of the burn.

Area. Enter the maximum possible estimated acreage for each day. Leave blank or enter "N/A" if burning piles.

Pile Volume. Enter the maximum possible estimated pile volume in cubic feet for each day. Leave blank or enter "N/A" if not burning piles.

Waiver Request. Specify the type of waiver(s) being requested. State the circumstances for each waiver being requested, as specified on the form, as the demonstration that a waiver should be granted from the requirements of Chapter 10, Section 4(f)(iii).

Comments. Provide any other comments that might help clarify or explain other entries or identify any additional information submitted in support of a SMP-I Smoke Dispersion Waiver request.

Signature & Date. If submitting this form via fax, please sign and date the form prior to submittal. If the SMP-I Smoke Dispersion Waiver Form is submitted electronically, the electronic signature will be attributed to the sender.

5.3. SMP-II Smoke Dispersion Waiver

Following are line-by-line instructions for filling out the SMP-II Smoke Dispersion Waiver Form.

Burn Name. Provide the name of the planned burn project.

ID #. Provide the ID number assigned by the WDEQ-AQD upon receipt of the registration form.

Nearest Population. Provide the distance (in miles) to the nearest population(s) from the planned burn project.

Explanation: Providing this information makes the burner and WDEQ-AQD aware of the people and places that could be affected by the planned burn project.

Daily Burn Information.

Explanation: This information allows WDEQ-AQD to as accurately as possible estimate the emissions to be produced.

Date(s). Enter the date(s) (month/day/year) when burning is expected to occur.

Area. Enter both the maximum possible and most likely estimated acreage for each day. Leave blank or enter "N/A" if burning piles.

Pile Volume. Enter both the maximum possible and the most likely estimated pile volume in cubic feet for each day. Leave blank or enter "N/A" if not burning piles.

Waiver Request. Specify the type of waiver(s) being requested. State the circumstances for each waiver being requested, as specified on the form, as the demonstration that a waiver should be granted from the requirements of Chapter 10, Section 4(g)(i)(D)(II).

Specify any additional information submitted in support of a SMP-II Smoke Dispersion Waiver request such as, a map showing diurnal drainage(s), a map showing the burn project area and nearby population(s) with the prescribed wind direction, and/or a smoke mitigation plan.

Comments. Provide any other comments that might help clarify or explain other entries or identify any additional information submitted in support of a SMP-II Smoke Dispersion Waiver request.

Signature & Date. If submitting this form via fax, please sign and date the form prior to submittal. If the SMP-II Smoke Dispersion Waiver Form is submitted electronically, the electronic signature will be attributed to the sender.

STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION

SMP-II Emission Reduction Technique Waiver Form

BURN NAME _____ **ID #** _____

NEAREST POPULATION _____

DAILY BURN INFORMATION:

	DATE(S) (MONTH/DAY/YR)	AREA (ACRES)		PILE VOL. (CU-FT)	
		Max. Possible	Most Likely	Max. Possible	Most Likely
DAY 1					
DAY 2					
DAY 3					
DAY 4					
DAY 5					
DAY 6					
DAY 7					

WAIVER REQUEST:

STATE THE CIRCUMSTANCES THAT REQUIRE BURNING WITHOUT IMPLEMENTING A MINIMUM OF ONE EMISSION REDUCTION TECHNIQUE. STATE ALL APPLICABLE FEASIBILITY CONSIDERATIONS.

DEMONSTRATION THAT A WAIVER SHOULD BE GRANTED FROM WAQSR CH. 10, SEC. 4(g)(i)(C):

COMMENTS _____

Please note that approval of the SMP-II Emission Reduction Technique Waiver must be granted by the WDEQ-AQD prior to igniting the planned burn project.

This form shall be submitted by January 31 or no later than two weeks prior to ignition.

SIGNATURE _____ **DATE** _____

If SMP-II Emission Reduction Technique Waiver Form is submitted electronically, the electronic signature will be attributed to the sender.

STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION

SMP-I Smoke Dispersion Waiver Form

CONTACT INFORMATION

NAME _____ PHONE _____
 ADDRESS _____ FAX _____
 CITY _____ E-MAIL _____
 STATE _____ ZIP _____
 AGENCY/COMPANY (IF APPLICABLE) _____

BURN NAME _____ **ID #** *To Be Assigned by WDEQ*

LOCATION: COUNTY _____ ELEVATION (FEET) _____
 LEGAL: SECTION _____ TOWNSHIP _____ RANGE _____
 LATITUDE _____ LONGITUDE _____ DATUM _____
 UTM: ZONE _____ EAST _____ NORTH _____ DATUM _____

NEAREST POPULATION _____

DAILY BURN INFORMATION:

	DATE(S) (MONTH/DAY/YR)	VEGETATION TYPE(S)	AREA (ACRES) Max. Possible	PILE VOL. (CU-FT) Max. Possible
DAY 1				
DAY 2				
DAY 3				
DAY 4				
DAY 5				
DAY 6				
DAY 7				

WAIVER REQUEST:

TIME OF DAY		STATE THE CIRCUMSTANCES THAT REQUIRE NIGHTTIME BURNING AND INDICATE THE PLANNED TIME OF IGNITION.
WIND SPEED		STATE THE CIRCUMSTANCES THAT REQUIRE BURNING WHEN THERE IS NOT AT LEAST A SLIGHT BREEZE.
WIND DIRECTION AND DISTANCE TO POPULATION		STATE THE CIRCUMSTANCES THAT REQUIRE BURNING WHEN A POPULATION IS WITHIN 0.5 MILE OF THE PLANNED BURN PROJECT IN THE DOWNWIND TRAJECTORY. STATE THE WIND DIRECTION AND DISTANCE TO POPULATION.

DEMONSTRATION THAT A WAIVER SHOULD BE GRANTED FROM WAQSR Ch. 10, SEC. 4(f)(iii):

COMMENTS _____

Please note that approval of the SMP-I Smoke Dispersion Waiver must be granted by the WDEQ-AQD prior to igniting the planned burn project.

This form shall be submitted to the WDEQ-AQD by 10:00 am one business day prior to ignition.

SIGNATURE _____

DATE _____

If SMP-I Smoke Dispersion Waiver Form is submitted electronically, the electronic signature will be attributed to the sender.

To be Completed by WDEQ Only

SMP-I SD WAIVER

APPROVED

NOT APPROVED

CONDITIONS

APPROVED BY _____

DATE _____

To be Completed by WDEQ Only

**STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION**

SMP-II Smoke Dispersion Waiver Form

BURN NAME _____ **ID #** _____

NEAREST POPULATION _____

DAILY BURN INFORMATION:

	DATE(S) (MONTH/DAY/YR)	AREA (ACRES)		PILE VOL. (CU-FT)	
		Max. Possible	Most Likely	Max. Possible	Most Likely
DAY 1					
DAY 2					
DAY 3					
DAY 4					
DAY 5					
DAY 6					
DAY 7					

WAIVER REQUEST:

VENTILATION CATEGORY
“FAIR” AND DISTANCE TO
POPULATION

STATE THE CIRCUMSTANCES THAT REQUIRE BURNING WHEN THE VENTILATION CATEGORY IS “FAIR” AND A POPULATION IS WITHIN 10 MILES OF THE PLANNED BURN PROJECT IN THE DOWNWIND TRAJECTORY. STATE THE WIND DIRECTION AND DISTANCE TO POPULATION.

VENTILATION CATEGORY
“POOR”

STATE THE CIRCUMSTANCES THAT REQUIRE BURNING WHEN THE VENTILATION CATEGORY IS “POOR”. STATE THE WIND DIRECTION AND DISTANCE TO POPULATION.

DEMONSTRATION THAT A WAIVER SHOULD BE GRANTED FROM WAQSR CH. 10, SEC. 4(g)(i)(D)(II):

- MAP IDENTIFYING DIURNAL DRAINAGES
- MAP SHOWING THE PLANNED BURN PROJECT AREA AND POPULATION(S) WITH WIND DIRECTION
- SMOKE MITIGATION PLAN

COMMENTS _____

Please note that approval of the SMP-II Smoke Dispersion Waiver must be granted by the WDEQ-AQD prior to igniting the planned burn project.

This form shall be submitted to the WDEQ-AQD by 10:00 am one business day prior to ignition.

SIGNATURE _____ **DATE** _____

If SMP-II Smoke Dispersion Waiver Form is submitted electronically, the electronic signature will be attributed to the sender.

6. Visual Monitoring & Photo / Video Log Instructions

SMP-II burners and responsible jurisdictional fire authorities will be required to conduct and document visual monitoring on all planned burn projects and unplanned fire events. Documentation of visual monitoring will be provided with the Post Burn Reporting Form and may include copies of the Visual Monitoring Log and/or photos/videos with the accompanying Photo/Video Log.

Explanation: Conducting and documenting visual monitoring makes the burner or responsible jurisdictional fire authority aware of smoke impacts resulting from the planned burn project or unplanned fire event, and enables the burner or responsible jurisdictional fire authority to take corrective action should the monitoring show the need. Providing the documentation with the Post Burn Reporting Form enables the WDEQ-AQD to verify what impacts were monitored by the burner or responsible jurisdictional fire authority.

6.1. Visual Monitoring Log

Following are line-by-line instructions for filling out the Visual Monitoring Log.

Burn Name. Provide the name of the planned burn project or unplanned fire event.

Explanation: This is to help the WDEQ-AQD identify separate planned burn projects by the same burner and unplanned fire events with the same jurisdictional fire authority.

ID #. For unplanned fire events, leave the ID number space blank. For SMP-II burns, provide the ID number assigned by the WDEQ-AQD upon receipt of the registration form.

Explanation: The ID number will be assigned by the WDEQ-AQD. This number will be unique to a planned burn project or unplanned fire event and will be used to identify and track separate planned burn projects by the same burner and unplanned fire events with the same jurisdictional fire authority.

Observer Name(s). Provide the name of the person(s) making the successive visual observations of the smoke plume characteristics.

Explanation: This enables the WDEQ-AQD to identify the observer(s) if necessary.

Successive Observations.

Explanation: This information provides documentation of the smoke plume characteristics.

Date(s). Enter the date(s) (month/day/year) of each smoke plume observation.

Time of Day. For each date, enter the time of each smoke plume observation.

Smoke Plume Appearance. Enter which Figure (i.e., 1 or 2) on the bottom of the Visual Monitoring Log best represents how the smoke plume appears.

Height of Smoke Plume. Enter the height (in feet) of the smoke plume above the ground.

Direction of Smoke Dispersion. Enter the direction(s) the smoke is dispersing (i.e., the direction the smoke is blowing toward). The direction can be very limited such as “SW” or it may be a range such as “S – E” or it can be “all”.

Residual Smoke Present. If there is any evidence of residual smoke in the area, please enter “yes”. If there is no residual smoke, enter “no”.

Comments. Provide any other comments that might help clarify or explain other entries.

6.2. Photo / Video Log

Following are line-by-line instructions for filling out the Photo / Video Log.

Burn Name. Provide the name of the planned burn project or unplanned fire event.

Explanation: This is to help the WDEQ-AQD identify separate planned burn projects by the same burner and unplanned fire events with the same jurisdictional fire authority.

ID #. For unplanned fire events, leave the ID number space blank. For SMP-II burns, provide the ID number assigned by the WDEQ-AQD upon receipt of the registration form.

Explanation: The ID number will be assigned by the WDEQ-AQD. This number will be unique to a planned burn project or unplanned fire event and will be used to identify and track separate planned burn projects by the same burner and unplanned fire events with the same jurisdictional fire authority.

Photographer Name(s). Provide the name of the person(s) taking photo and/or video images of the smoke plume.

Explanation: This enables the WDEQ-AQD to identify the photographer(s) if necessary.

Photo / Video Observations.

Explanation: This information provides documentation of the photo and/or video observations of the smoke plume.

Date(s). Enter the date(s) (month/day/year) of each photo and/or video observation.

Time of Day. For each date, enter the time of each photo and/or video plume observation.

Photo. For each photo, enter whether the photo was taken on film or digitally.

Video. For each video, enter whether the video was taken on film or digitally.

Photographer Location. For each photo and/or video, enter the location (i.e., distance and direction) of the photographer in relation to the planned burn project or unplanned fire event (e.g., 600 feet “SW”).

Direction of Camera View. For each photo and/or video, enter the direction(s) the camera is pointing toward when the photo and/or video was taken. The direction can be very limited such as “SW” for a photo or it may be a range such as “S – E” for a video.

Comments. Provide any other comments that might help clarify or explain other entries.

RESOURCE MATERIAL

1. Determining SMP-I/SMP-II Status

The thresholds for the different levels of vegetative material burning are represented in Figure 2 on page 5. To assist the burner in determining what SMP level the planned burn project falls under, the emissions equivalency conversion tables below are provided. These tables represent, by vegetation type, what acreage or pile volume amounts produce 0.25 and 2 tons of PM₁₀ emissions, using vegetation type and vegetation quantity.

Vegetation Type	0.25 Tons PM ₁₀ Emissions	2 Tons PM ₁₀ Emissions
Field Crops	16 acres	130 acres
Shrub Land	8 acres	68 acres
Forest	6 acres	46 acres
Grass	25 acres	200 acres
Weeds (ditches, fencelines)	12 acres	100 acres
Shrub/Forest Piles	1,250 cubic feet	10,000 cubic feet

Table A. Acreage & Pile Volume / Emissions Equivalency Conversion

Width of Burn (Weeds)	Length of Burn	
	0.25 Tons PM ₁₀ Emissions ¹⁷	2 Tons PM ₁₀ Emissions ¹⁸
1 foot	103 miles	825
2 feet	52 miles	413
3 feet	34 miles	275
4 feet	26 miles	206
5 feet	21 miles	165
6 feet	17 miles	138
7 feet	15 miles	118
8 feet	13 miles	103
9 feet	11 miles	92
10 feet	10 miles	83
15 feet	7 miles	55
20 feet	5 miles	41
30 feet	3 miles	28
40 feet	3 miles	21
50 feet	2 miles	17

Table B. Ditch and Fenceline Burn Width & Length / Emissions Equivalency Conversion

¹⁷ For additional widths, the length in miles equivalency to 0.25 tons PM₁₀ emissions can be obtained by dividing the quantity 103 by the average width in feet of the open burn. (For example: 103 ft-mi / 25 ft = 4 miles.)

¹⁸ For additional widths, the length in miles equivalency to 2 tons PM₁₀ emissions can be obtained by dividing the quantity 825 by the average width in feet of the open burn. (For example: 825 ft-mi / 25 ft = 33 miles.)

2. Lists

2.1. Alternatives to Burning

For evaluating alternatives, the WDEQ-AQD will rely on WRAP-developed reference material on alternatives to burning that describe a variety of alternatives and methods for assessing their potential applicability. The tables below are taken from these documents.^{19, 20} When considering alternatives to burning, burners will want to evaluate the usefulness of all of the alternatives listed below, regardless of land type (i.e., agricultural land, rangeland, or wildland).

ALTERNATIVES TO BURNING: AGRICULTURAL LANDS

Leave Residues in Place

Cut & Drop Residue in Place
Soil Incorporation: Wet or Dry
Soil Incorporation: Fallow Field, Crop Rotation
Cut, Mulch, Drop in Place; Leave Standing, Crimp or Roll

Scientific Improvements

Genetic Selection: Less Fuel Residual
Genetic Selection: Disease / Pest Resistance
Genetic Selection: Other Tolerance

Alternative Land Use²³

Plant Crops that do not Need to be Burned
Land Conversion to Non-Agricultural Use
Conservation Tillage Practices

Cut or Collect Residues and Haul

Cut, Mulch, and Haul Residue
Haul to: Waste or Landfill Facility
Haul to: Permitted Burn Facility
Haul to: Power Generation Facility
Haul to: Ethanol Production Facility
Haul to: Redistribution Facility
Haul to: Manufacturing / Use Other²¹
Haul to: Fiberboard Facility
Haul to: Particleboard Facility
Haul to: Use as Compost or Mulch²²
Haul to: Use as Animal Feed, Bedding
Haul to: Use as Erosion Control²⁴

ALTERNATIVES TO BURNING: WILDLAND

Manual / Hand

Cut & Scatter
Pile

Chemical

Grazing

Air Curtain Incinerator²⁵

Mechanical

Fuel Modification

Pile
Masticate / Mow / Crush
Chip / Grind
Tree Removal
Bole Removal
Whole-Tree Yarding
Cut-to-Length Processing

¹⁹ *Non-Burning Management Alternatives on Agricultural Lands in the Western United States, Volume II: Non-Burning Management Alternatives and Implementation Plan Strategies*, Prepared for Western Regional Air Partnership Fire Emissions Joint Forum, Prepared by Eastern Research Group and Enviro-Tech Communications, May 15, 2002, Table 2-1.

²⁰ *Nonburning Alternatives to Prescribed Fire on Wildlands in the Western United States*, Prepared for Western Regional Air Partnership Fire Emissions Joint Forum, Prepared by Jones & Stokes, February 2004, Chapter 3, Pages 22 - 28.

²¹ Includes cement products, building materials, paper packaging, and cardboard manufacturing.

²² Includes food production such as mushroom composting, compost for dairy facilities, manure composting, animal bedding, and landscaping.

²³ Alternate land use decisions are expected to be more related to economics and crop production environments, as well as land use pressures, than they are to environmental pressures.

²⁴ Includes wind and soil erosion control, forestry rehabilitation, and landfill covering.

2.2. Emission Reduction Techniques

The WDEQ-AQD will rely on the WRAP-developed work products for support in the process for estimating the potential emission reductions achieved through the use of emission reduction techniques. The final work products provide an annotated bibliography, indices and summary tables on emission reduction techniques for agricultural burning and wildland fire.²⁶

EMISSION REDUCTION TECHNIQUES

Reduce Area Burned

- Burn Concentrations
- Isolate Fuels
- Mosaic Burning
- Alternate Year Burning

Reduce Fuel Load

- Mechanical Removal
- Mechanical Processing
- Firewood Sales
- Biomass for Electric Generation
- Biomass Utilization
- Ungulates
- Incorporation into Soil

Reduce Fuel Production

- Chemical Treatments
- Site Conversion
- Land Use Change

Reduce Fuel Consumed

- High Moisture in Large Woody Fuels
- Moist Litter and/or Duff
- Burn before Precipitation
- Burn before Large Fuel Cures
- Burn when Green

Burn Before New Fuels Appear

- Before Litter Fall
- Before Green-Up

Increase Combustion Efficiency

- Burn Piles or Windrows
- Backing Fires
- Dry Conditions
- Rapid Mop-Up
- Residue Moisture
- Aerial Ignition / Mass Ignition
- Air Curtain Incinerators²⁷
- Into-the-Wind-Striplighting
- Mobile Field Sanitizer
- Maintaining Fire Line Intensity

²⁵ An air curtain incinerator is considered a point source that, prior to construction and operation, will require a permit under WAQSR Chapter 6, Section 2, Permit requirements for construction, modification, and operation.

²⁶ *Emission Reduction Techniques for Agricultural Burning and Wildland Fire*, Prepared for Western Regional Air Partnership Fire Emissions Joint Forum, Prepared by MACTEC Federal Programs, March 2004.

²⁷ An air curtain incinerator is considered a point source that, prior to construction and operation, will require a permit under WAQSR Chapter 6, Section 2, Permit requirements for construction, modification, and operation.

2.3. Feasibility Considerations for the Use of Alternatives to Burning and Emission Reduction Techniques

The following list of feasibility considerations is based on information contained within the WRAP-developed documents on alternatives to burning, referenced in section 2.1 of the Resource Material above. The material on feasibility considerations in these documents may be used as guidance for assessing the feasibility of alternatives to burning and emission reduction techniques.

FEASIBILITY CONSIDERATIONS

Economic

- Costs of Treatment
- Infrastructure
- Utilization: Types of Products
- Utilization: Constraints
- Funding Sources / Fuel Management Programs
- Labor Sources
- Nonprofit Organizations
- Indirect Impacts – Regional

Environmental

- Air Quality
- Water Quality
- Soil Compaction / Erosion
- Removal of Nutrients
- Wildlife Habitat
- Threatened & Endangered Species
- Spread of Undesirable Species
- Disease / Pest Impacts
- Cultural / Historic Resources

Technical

- Land Management Objective
- Habitat Types
- Fuel Category
- Fuel Structure
- Topography
- Climatic Conditions
- Accessibility
- Treatment Options

Public Interests

- Health & Safety
- Tribal Concerns
- Social Justice
- Small Business Concerns
- Resistance by Resource Agencies
- Resistance by Environmental Groups
- Resistance by Industry Groups
- Resistance by Community Groups
- Administrative Barriers

3. Determining Ventilation Category

Ventilation category is a classification that describes the potential for smoke to ventilate away from its source. The classification (Excellent, Very Good, Good, Fair, Poor) is determined by multiplying the mixing height in feet by the transport winds in knots, thus providing the ventilation category in knot-feet. The representative ranges are included in the table below.

VENTILATION CATEGORY	KNOT-FEET
Excellent	≥ 150,000
Very Good	100,000 – 149,999
Good	60,000 – 99,999
Fair	40,000 – 59,999
Poor	≤ 40,000

Table C. Ventilation Category

The ventilation category can be found in the National Weather Service’s Fire Weather Forecast, which is the WDEQ-AQD approved source for this information. Several National Weather Service Offices have responsibility for different portions of Wyoming. The table below provides information to access the Fire Weather Forecasts over the internet.

NWS Office	Area	Fire Weather URL
Riverton	Big Horn, Fremont, Hot Springs, Johnson, Lincoln, Natrona, Park, Sheridan, Sublette, Sweetwater, Teton, Uinta, Washakie Counties	http://www.crh.noaa.gov/riw/fire.htm
Cheyenne	Albany, Carbon, Converse, Goshen, Laramie, Niobrara, Platte Counties	http://www.crh.noaa.gov/cys/firewx.php
Rapid City	Campbell, Crook, Weston Counties	http://www.crh.noaa.gov/unr/firewx/index.htm
Billings	Big Horn Canyon Recreation Area in Big Horn County Big Horn National Forest in Big Horn, Johnson, Sheridan Counties	http://www.wrh.noaa.gov/Billings/fire.shtml
Pocatello	Targhee National Forest in Teton County	http://www.wrh.noaa.gov/Pocatello/firewx/index.shtml

Table D. National Weather Service Office Information

4. Maps

4.1. Wyoming Class I and Nonattainment Areas

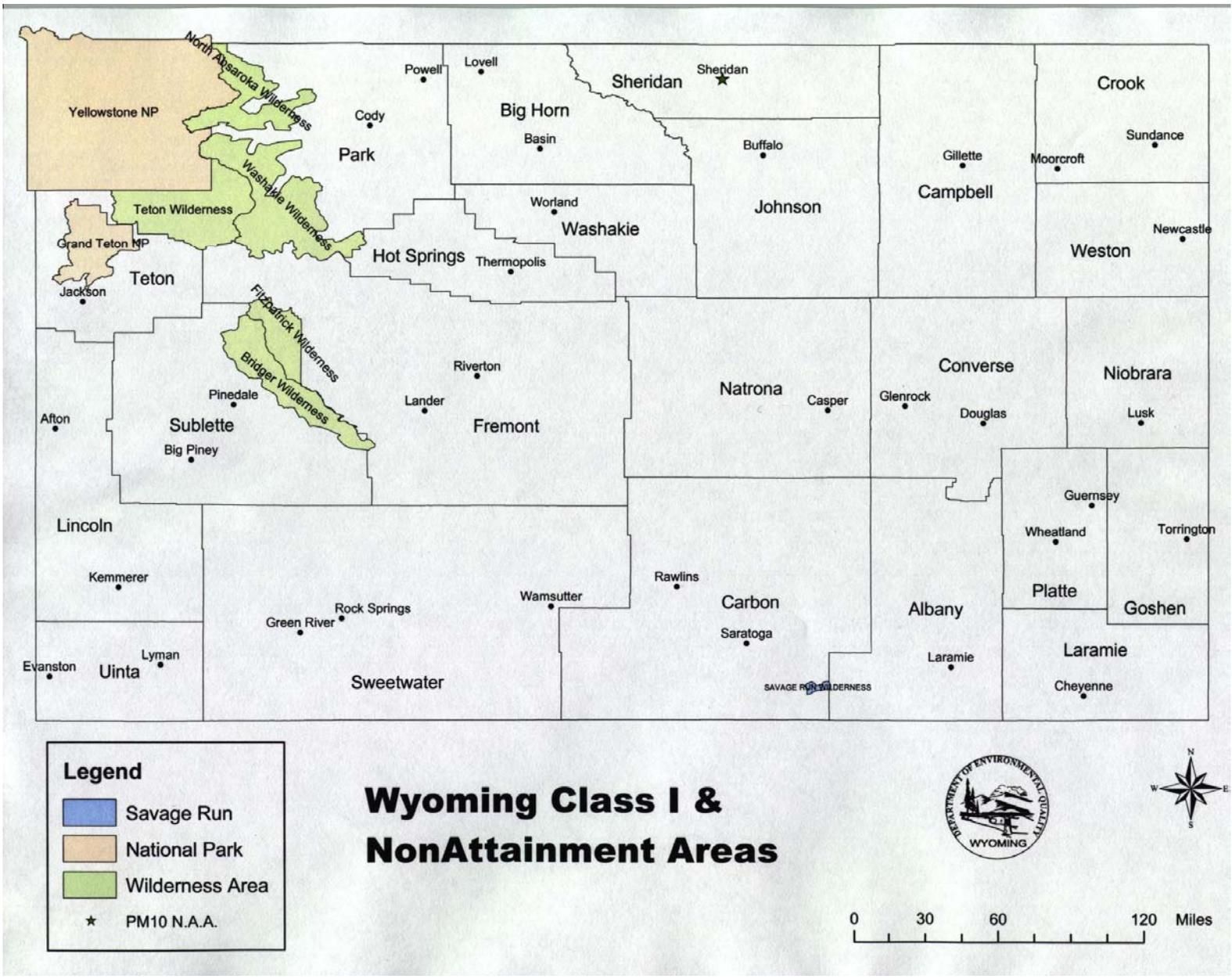
Class I areas, for the purposes of the Wyoming SMP and Chapter 10, Section 4, include all mandatory Class I federal areas and the Savage Run Wilderness Area, a state Class I area. Wyoming's mandatory federal Class I areas are Grand Teton and Yellowstone National Parks, and the Bridger, Fitzpatrick, North Absaroka, Teton, and Washakie Wilderness Areas. See Wyoming Class I & Nonattainment Areas map.

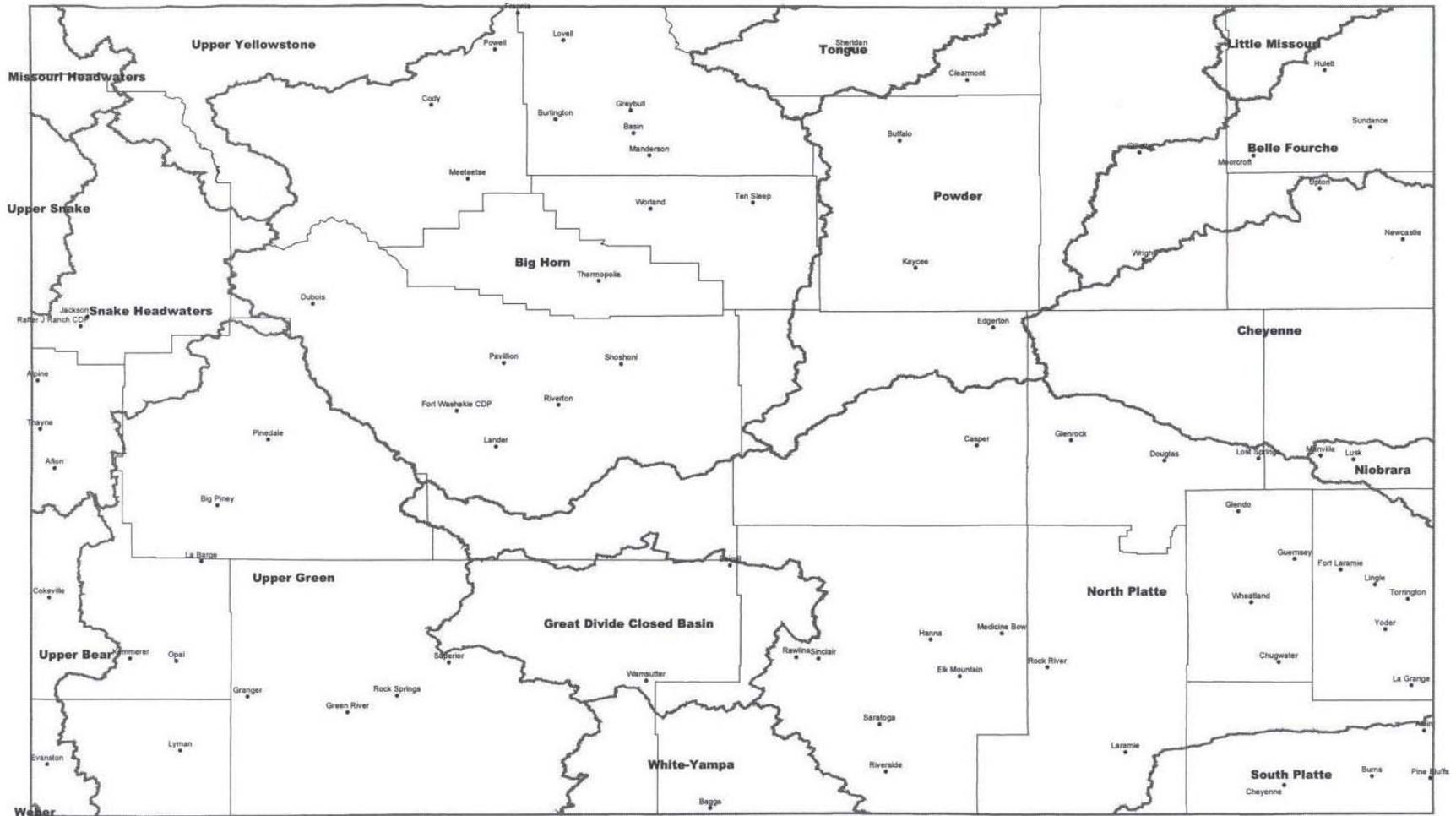
The only area of the state designated Nonattainment is the City of Sheridan. The City was designated as a moderate Nonattainment area for PM₁₀ on November 15, 1990 in 40 CFR 81.351. While the corporate boundary for the City is the official area, the State of Wyoming continues to monitor activities outside of the Nonattainment area which might cause or contribute to a violation of the ambient standards within the Nonattainment area. If the State were to record violations of the ambient standards within the Nonattainment area that resulted from burning activities outside of the Nonattainment area, the State would need to reexamine boundaries of the Nonattainment area as well as the level of the classification. See Wyoming Class I & Nonattainment Areas map.

Wyoming is also within 62 miles (100 km) of the following Class I areas in adjacent states: Northern Cheyenne Reservation and Red Rock Lakes Wilderness Area, Montana; Mount Zirkel and Rawah Wilderness Areas, and Rocky Mountain National Park, Colorado; and Wind Cave National Park, South Dakota. There are also Nonattainment areas in the adjacent states of Colorado, Idaho, Montana, and Utah.

4.2. Wyoming Airsheds

For the SMP, Wyoming is basing its airsheds on watershed boundaries that, because of topography, meteorology, and/or climate, are frequently affected by the same air mass. See Wyoming 6-Digit Hydrologic Unit Code (HUC) Watersheds map.





Wyoming 6-Digit Hydrologic Unit Code (HUC) Watersheds

4. WDEQ-AQD Contact Information

The WDEQ-AQD District Compliance staff will administer WAQSR Chapter 10, Section 2, Open burning restrictions. The Cheyenne WDEQ-AQD staff will administer WAQSR Chapter 10, Section 4, Smoke management requirements. The WDEQ-AQD staff work regular business hours (Monday through Friday, 8:00 a.m. to 5:00 p.m.) unless otherwise noted and may be contacted by phone, fax or e-mail. Districts 4 and 5 Compliance Staff do not have voice-mail capability. Contact information, as of September 10, 2004, for the WDEQ-AQD staff is as follows:

Staff	Address	Phone	Fax	E-Mail
District 1: Albany, Goshen, Laramie, Niobrara, and Platte Counties				
Glenn Spangler Kristi Tarantola Melissa Meares	WDEQ-AQD 122 West 25 th Street Herschler Building, Floor 4 West Cheyenne, WY 82009	Glenn (307) 777-3787 Kristi (307) 777-3783 Melissa (307) 777-3771 Main (307) 777-7391	(307) 777-5616	gspang@state.wy.us ktaran@state.wy.us mmeare@state.wy.us
District 2: Carbon, Converse, and Natrona Counties				
Chris Hanify Jeff Hancock	WDEQ-AQD 3030 Energy Lane, Suite 200 Casper, WY 82604	Chris (307) 473-3470 Jeff (307) 473-3456 Main (307) 473-3455	(307) 473-3458	chanif@state.wy.us jhanco@state.wy.us
District 3: Campbell, Crook, Johnson, Sheridan, and Weston Counties				
Mike Warren Judy Shamley Brad Steidley Tanner Shatto	WDEQ-AQD 1866 South Sheridan Ave. Sheridan, WY 82801	Main (307) 673-9337 Mike ext. 243 Judy ext. 238 Brad ext. 241 Tanner ext. 249	(307) 672-2213	mwarre@state.wy.us jshaml@state.wy.us bsteid@state.wy.us tshatt@state.wy.us
District 4: Big Horn, Fremont, Hot Springs, Lincoln, Park, and Washakie Counties				
Greg Meeker David Reid	WDEQ-AQD 250 Lincoln Street Lander, WY 82520	Main (307) 332-6755	(307) 332-7726	gmeeke@state.wy.us dreid@state.wy.us
District 5: Sublette, Sweetwater, Teton and Uinta Counties				
Tony Hoyt Carl Disel Ann Shed Nick Czarnecki	WDEQ-AQD 250 Lincoln Street Lander, WY 82520	Main (307) 332-6755	(307) 332-7726	thoyt@state.wy.us cdisel@state.wy.us ashed@state.wy.us ncazrn@state.wy.us
Cheyenne:				
Mark Arn (6:30 am – 3:30 pm)	WDEQ-AQD 122 West 25 th Street Herschler Building, Floor 4 West Cheyenne, WY 82009	Mark (307) 777-3782 Main (307) 777-7391	(307) 777-5616	marn@state.wy.us

GLOSSARY/ACRONYMS

Note: The definitions included here differ slightly from those in WAQSR Chapter 10, Section 4, Smoke management requirements. The intent of the definitions is the same, but greater detail has been included here to assist users of this document. Also, for definitions of technical terms used in the forms and instructions, see the glossaries referenced in the Reference Material section.

< - less than. For example, burning 10 miles of weeds in an irrigation lateral that is three feet wide produces < 0.25 tons PM₁₀ emissions per day.

> - greater than. For example, burning 150 acres of field crops produces > 2 tons PM₁₀ emissions per day.

≤ - less than or equal to. For example, burning 16 acres of field crops or 10 miles of weeds in an irrigation lateral that is three feet wide produce ≤ 0.25 tons PM₁₀ emissions per day.

≥ - greater than or equal to. For example, burning 150 acres of field crops or 68 acres of shrub land produce ≥ 2 tons PM₁₀ emissions per day.

Agricultural Land – includes croplands, pasture, and other lands on which crops or livestock are produced.

Air Curtain Incinerator (ACI) – an incinerator that operates by forcefully projecting a curtain of air across an open chamber or pit in which combustion occurs. This results in a more complete combustion process that produces little smoke and reduces emissions and particulates. An ACI may be used as an emission reduction technique (ERT) or an alternative to burning.

Air Quality Impacts – the undesirable addition to the atmosphere of substances (gases, liquids, or solid particles) that are foreign to the natural atmosphere or are present in quantities exceeding natural concentrations.

Airshed – a geographic area based on watershed boundaries that, because of topography, meteorology, and/or climate, is frequently affected by the same air mass.

Alternatives to Burning – non-burning alternatives is broadly defined as treatments employing manual, mechanical, chemical, or biological methods to manage vegetation and/or fuel loads or land management practices that treat vegetation (fuel) without using fire. Also known as non-burning alternatives to fire.

Burner – the individual, agency, organization, land manager or landowner who is responsible for conducting a planned burn project.

Class I Area – all mandatory Class I Federal areas established in the Clean Air Act of 1977 and include the following for the State of Wyoming: Yellowstone National Park, Grand Teton National Park, North Absaroka Wilderness, Washakie Wilderness, Teton Wilderness, Bridger Wilderness and Fitzpatrick Wilderness. Such term also includes the Savage Run Wilderness, which is not a mandatory Class I Federal area, and any future Class I area redesignated in accordance with WAQSR Chapter 6, Section 4(d).

Clean Air Act (CAA) – a federal law enacted to ensure that air quality standards are attained and maintained. Initially passed by Congress in 1963, it has been amended several times.

Criteria Pollutants – pollutants deemed most harmful to public health and welfare and that can be monitored effectively. They include carbon monoxide (CO), lead (Pb), nitrogen oxides (NO_x), sulfur dioxide (SO₂), ozone (O₃), particulate matter (PM) of aerodynamic diameter less than or equal to 10 micrometers (PM₁₀) and particulate matter of aerodynamic diameter less than or equal to 2.5 micrometers (PM_{2.5}).

Conservation Reserve Program (CRP) – a voluntary program for agricultural landowners to establish long-term, resource conserving covers on eligible farmland.

Decimal Degrees – latitude / longitude converted to a decimal value from degrees, minutes, and seconds using the following equation, Degrees + (minutes/60) + (seconds/3600). For example, a latitude of 122 degrees 45 minutes 45 seconds = 122 + (45/60) + (45/3600) = 122.7625 decimal degrees. A decimal degree converter is available at www.fcc.gov/mb/audio/bickel/DDMMSS-decimal.htm.

Downwind Trajectory – in the direction that the wind is blowing toward.

Emission Reduction Technique (ERT) – a strategy for controlling smoke from prescribed fires that minimizes the amount of smoke output per unit of area treated or other objective unit of accomplishment, used in conjunction with fire. Such strategies can include manual, mechanical, chemical or biological treatments that minimize the burn area, reduce the fuel load, or increase the efficiency of combustion.

Environmental Protection Agency (EPA) – as it pertains to this document, the federal agency responsible for regulating air quality.

Fuel Loading – the amount of fuel present expressed quantitatively in terms of weight of fuel per unit area usually tons per acre.

Hazardous Fuel Reduction – burning in areas where over density of vegetation could cause risk of catastrophic wildfire.

Hydrologic Unit Code (HUC) – a hierarchical classification developed by the Water Resources Council that describes the water drainage basins in the United States. Each hydrologic unit is identified by a unique code based on the four levels of classification in the hydrologic unit system.

Ignition – to set a fire; to cause a fuel to burn.

Jurisdictional Fire Authority – an agency, organization or department whose purpose is to prevent, manage, and/or suppress fires in a designated geographic area, including, but not limited to, volunteer fire departments, fire districts, municipal fire departments and federal fire staff.

Responsible Jurisdictional Fire Authority – the agency, organization or department that has the authority for the unplanned fire event.

Knot-Feet – see Ventilation Category

Land Manager – an individual, agency or organization that has the overall land and/or resource management responsibility.

Maintenance Area – see Nonattainment Area.

Mandatory Class I Federal Area – an area set aside under the Clean Air Act (CAA) to receive the most stringent protection from air quality degradation. Mandatory Class I Federal Areas are (1) international parks, (2) national wilderness areas and memorial parks larger than 5,000 acres in size, (3) national parks that exceed 6,000 acres in size and which were in existence when the 1977 CAA amendments were enacted. The extent of a mandatory Class I Federal area includes subsequent changes in boundaries, such as park expansions.

Modification – an SMP-II burner or the responsible jurisdictional fire authority of an unplanned fire event under management may be asked to modify their planned action on a particular day in order to avoid air quality impacts. Modification will be determined in consultation between the WDEQ-AQD and the responsible party, and could include a reduction in acreage or volume, instrument monitoring, or postponement.

Monitoring – repeated observations (i.e., visual) or measurements (i.e., instrument) to evaluate changes in smoke affecting ambient air quality and/or visibility. Monitoring can be documented, which involves collection and analysis of the observations and/or measurements.

National Ambient Air Quality Standards (NAAQS) – maximum recommended concentrations of criteria pollutants to maintain reasonable standards of air quality.

National Fire Danger Rating System (NFDRS) – a system used by wildland fire management agencies to assess current fire danger at local levels.

Nonattainment Area (NAA) – a geographic area in which the level of a criteria air pollutant is higher than the level allowed by the federal standards. A Maintenance Area is an area that was designated nonattainment, but for which EPA has determined that the NAAQS have been attained and has fully approved an applicable implementation plan.

Open Burning – a fire where material is burned in the open or in a receptacle other than a furnace, incinerator, or other equipment connected to a stack or chimney.

Particulate Matter (PM) – any liquid or solid particles suspended in or falling through the atmosphere, ranging in size from 0.1 to 100 microns.

PM₁₀ – particulate matter of aerodynamic diameter less than or equal to 10 microns, approximately one-seventh the diameter of a human hair. Sources of PM₁₀ emissions are fugitive dust, power plants, commercial boilers, metallurgical industries, mineral industries, forest and residential fires, and motor vehicles.

PM_{2.5} – particulate matter of aerodynamic diameter less than or equal to 2.5 microns. A measure of fine particles of particulate matter that comes from fuel combustion, wildland and agricultural burning, woodstoves, etc.

Percent Consumption – the amount of a specified vegetation or fuel type removed by the fire process expressed as a percentage.

Periodic Observation (Attend and Observe) – to accommodate the broad range of SMP-I burn projects, periodic observation is not quantified temporally for SMP-I burners, i.e., some burns may require more frequent observations than others. Therefore, it will be advisable for the burner to consider an adequate frequency of attendance at and observation of their specific burn project so as to fulfill the purpose of this requirement, which is to determine the smoke dispersion, direction, and impacts.

Permit-by-Rule – a regulation in which the burden of compliance with its specified requirements is with the user; if the user is in compliance, then the activity is permitted as opposed to a permit-based regulation, which requires the burner to submit substantial information prior to each planned burn project that then the regulator must review in order to grant a permit.

Pile – materials that have been relocated either manually (by hand) or mechanically (by machinery) and heaped together.

Pile Volume – the quantity in cubic feet of vegetative materials that have been manually or mechanically relocated and heaped together, as calculated using pile shape and overall dimensions.

Planned Burn Project – burn area(s) or pile(s) of vegetative material that are being treated or managed utilizing planned fire for the same management objectives and that are on a contiguous land area.

Population – all individuals, other than the burner, occupying a fixed area. Fixed areas include, but are not limited to, portions of property normally occupied as residential, recreational, institutional, commercial, or educational premises, but do not include fixed areas under control of the burner.

Prescribed Fire – any fire ignited by management actions under specified conditions to meet explicit objectives, e.g., wildlife habitat improvement, hazardous fuel reduction, non-native vegetation eradication, removal of crop residue, etc.

Public Notification – a method that communicates information regarding planned burn projects or unplanned fire events to the public.

Rangeland – Land on which the historic climax plant community is predominantly grasses, grass-like plants, forbs, or shrubs. Includes lands re-vegetated naturally or artificially when routine management of that vegetation is accomplished mainly through manipulation of ecological principles. Rangeland includes natural grasslands, savannas, shrub lands, most deserts, tundra, alpine communities, coastal marshes and wet meadows (Natural Resources Conservation Service National Range and Pasture Handbook, 1997).

Regional Haze – visibility impairment caused by the cumulative air pollutant emissions from numerous sources over a wide geographic area.

Regional Haze Rule (RHR) – following the issuance of the Grand Canyon Visibility Transport Commission (GCVTC) Report, the EPA issued the Regional Haze Rule in July 1999 to improve visibility in 156 national parks and wilderness areas across the country. The RHR outlines the requirements for states and tribes to address regional haze in these mandatory Class I areas. The RHR provides two pathways for western states to follow as they implement the requirements of the RHR: 1) develop their regional haze implementation plans per the nationally applicable provisions of Section 308, or 2) Transport Region states may choose to incorporate the GCVTC recommendations into their regional haze implementation plans under Section 309 of the RHR.

Smoke Management Program (SMP) – a framework of procedures and efforts for managing smoke from planned burn projects and unplanned fire events to minimize emissions and impacts. SMPs are typically developed by states or tribes with cooperation from stakeholders.

Smoke Mitigation Plan – a plan identifying methods to mitigate smoke impacts such as avoidance, dilution, and emission reduction.

State Implementation Plan (SIP) – a plan devised by states to carry out their responsibilities under the CAA. SIPs must be approved by the EPA and include public review.

Unplanned Fire – any vegetative fire ignited by natural causes such as lightning and human causes such as accidental ignitions, escaped prescribed fire or arson; irrespective of the management objectives. For the sake of brevity, this document utilizes the terminology of unplanned fire under suppression and unplanned fire under management.

Unplanned Fire Under Suppression – any unplanned, non-structural fire that is under active suppression efforts. Also known as wildfire and wildland fire under suppression.

Unplanned Fire Under Management – the use of naturally ignited fire to accomplish specific pre-stated management objectives in a pre-defined geographic area and *not* under

suppression. Also known as: wildland fire use, fire use, wildfire use, prescribed natural fire, and wildland fire managed for resource benefit.

Vegetative Material – untreated unprocessed wood, including, but not limited to, trees, tree stumps, tree limbs, bark, chips, duff, grass, grass clippings, leaves, conifer needles, bushes, shrubs, weeds, clippings from bushes and shrubs, and agricultural plant residue.

Ventilation Category – the classification describing the potential for smoke or other pollutants to disperse from its source, and that is expressed in terms of Excellent, Very Good, Good, Fair or Poor. The Ventilation Category is calculated by multiplying the mixing height in feet by the transport wind speeds in knots (i.e., nautical miles per hour, equal to 1.15 miles per hour), thus providing the ventilation category in knot-feet.

Visibility Impairment – any perceptible change in visibility (light extinction, visual range, contrast, coloration) resulting from human activities.

Western Regional Air Partnership (WRAP) – The Western Regional Air Partnership (WRAP) was established in 1997 as the successor organization to the Grand Canyon Visibility Transport Commission. The WRAP is a voluntary organization comprised of western governors, including New Mexico, tribal leaders and federal agencies, and is charged “to identify regional or common air management issues, develop and implement strategies to address these issues, and formulate and advance western regional policy positions on air quality.”

Wyoming Fire Incident Reporting System (WFIRS) – a program established to meet national as well as state fire incident reporting requirements.

Wildland – an area in which development is essentially non-existent, except for roads, railroads, power lines, and similar transportation facilities. Structures if any are widely scattered.

Wind Direction - the direction the wind is blowing from.

Wyoming Ambient Air Quality Standards (WAAQS) – maximum allowable concentrations of air pollutants in the ambient air as established in the Wyoming Air Quality Standards and Regulations.

Wyoming Air Quality Standards and Regulations (WAQSR) – Air quality rules and regulations adopted in accordance with the provisions of Section 35-11-106 of the Wyoming Environmental Quality Act of 1973 and subsequently revised under the authorities of Sections 35-11-110, 112, 114 and 202 through 212 of the Wyoming Environmental Quality Act of 1993 and in accordance with the provisions of Sections 16-3-101 through 115 of the Wyoming Administrative Procedures Act.

Wyoming Department of Environmental Quality – Air Quality Division (WDEQ-AQD) – as it pertains to this document, the State agency responsible for regulating air quality in Wyoming.

REFERENCES

Regional Haze Rule

Published in the Federal Register on July 1, 1999, 64 FR 35714.

http://www.epa.gov/ttn/oarpg/t1/fr_notices/rhfedreg.pdf

EPA Interim Air Quality Policy on Wildland and Prescribed Fire

U.S. EPA, Office of Air Quality Planning and Standards, Interim Air Quality Policy on Wildland and Prescribed Fires, April 23, 1998.

<http://www.epa.gov/ttn/oarpg/t1/memoranda/firefnl.pdf>

AAQTF Recommendation on Air Quality Policy

Agricultural Air Quality Task Force, Air Quality Policy on Agricultural Burning, Recommendation to the U.S. Department of Agriculture, November 10, 1999.

<http://fargo.nserl.purdue.edu/faca/Archives/2000/Policy/Burning%20Policy.htm>

EPA AP-42 Emission Factors

AP-42, Fifth Edition, Volume 1, Chapter 1, October 1996.

<http://www.epa.gov/ttn/chief/ap42>

Guidelines for Estimating Volume Biomass and Smoke Production for Piled Slash

C.C. Hardy, General Technical Report PNW-GTR-364, February 1996.

Documents Developed by the Western Regional Air Partnership (WRAP)

WRAP Policy for Categorizing Fire Emissions

Approved by the Western Regional Air Partnership, November 15, 2001.

<http://www.wrapair.org/forums/fejf/documents/nbtt/NBTT.html>

WRAP Policy on Enhanced Smoke Management Programs for Visibility

Approved by the Western Regional Air Partnership, November 12, 2002.

http://www.wrapair.org/forums/fejf/documents/esmptt/policy/030115_ESMP_Policy.pdf

WRAP Policy on Fire Tracking Systems

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