Utah Smoke Management Plan

July 20, 1999
January 16, 2006 revision

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Utah Smoke Management Plan

I. PURPOSE

The purpose of this Utah Smoke Management Plan (SMP) is to identify the responsibilities of the Utah Division of Air Quality (DAQ) and Federal, and State land managers (Land Managers) to coordinate procedures that mitigate the impacts of prescribed fire and wildland fire use on public health, visibility, and public safety, in terms of smoke or visibility impacts. This plan is designed to meet the requirements of Title R307, state administrative rule for air quality; Regional Haze Rule, 40 CFR 51.309(d)(6); and the policies of the U.S. Environmental Protection Agency's (EPA) Interim Air Quality Policy on Wildland and Prescribed Fires (Interim Policy). On November 8, 1999, the EPA certified the SMP under the Interim Policy. The SMP may be revised at the end of the 1999 fall burning season and each year thereafter with the concurrence of all signatories to the attached Memorandum of Understanding.

II. GOALS

- To minimize or prevent smoke impacts to such a degree as possible in order to protect public health, public safety, and visibility
- To use prescribed fires and wildland fire use to accomplish the land management objectives of wildland fuel hazard reduction, vegetative management, natural ecological practices, and wildlife habitat improvement
- To develop an emission inventory for pollutants of interest based on reports of prescribed fire, wildland fire use, and wildfire activities
- To develop a system for reporting and coordinating burning operations on all forest and range lands in the State
- To encourage the development and use of alternative methods to burning for disposing of or reducing the amount of wildland fuels on lands in the State

III. SCOPE

The SMP serves as an operational plan for the state administrative rule, R307-204, by providing direction and operating procedures for all organizations involved in the use of prescribed fire, wildfire, and wildland fire use. R307-204 establishes by rule the procedures that land managers are required to follow to mitigate the impact of smoke on public health and visibility in the State. The Utah Enhanced Smoke Management Plan, Appendix B of the SMP, provides details on the visibility requirements of the Regional Haze Rule, 40 CFR 51.309(d)(6), and operating procedures to reduce visibility impacts from smoke in Class I areas. The SMP applies to all signatories to the Memorandum of Understanding (MOU), Appendix A. The SMP also applies to landowners who use prescribed fire on lands where the Department of Natural Resources (DNR) provides fire protection during the June-October fire season, with the exception of landowners who use prescribed fire covering less than 20 acres and are permitted through the DNR's Division of Forestry, Fire and State Lands.

This plan does not apply to agricultural burning and open burning as defined by Utah Code 19-2-114. All future reference to fire in this plan will refer only to prescribed fire, wildfire, and wildland fire use

unless otherwise indicated. Lands that have been classified as Conservation Reserve Program (CRP) lands, and are adjacent to agriculture lands, will be treated as agricultural lands and will not have to abide by the requirements of the SMP. CRP lands that are adjacent to Federal or State lands will be required to abide by the requirements of the SMP.

IV. DEFINITIONS

Air Quality - the characteristics of the ambient air (all locations accessible to the general public) as indicated by concentrations of the six air pollutants for which national standards have been established (e.g., particulate matter, sulfur dioxide, nitrogen dioxide, ozone, carbon monoxide, and lead), and by visibility in mandatory Federal Class I areas. For the purposes of this Smoke Management Plan, concentrations of particulate matter are taken as the primary indicators of ambient air quality.

Annual Emissions Goal – the annual establishment of a planned quantitative value of emissions reductions from prescribed fire.

Burn Window - the period of time when the prescribed fire is scheduled for ignition.

Conservation Reserve Program (CRP): lands that have been set aside for the specific purpose of conversion from farming lands to wildlands.

Class I Areas - an area set aside under 42 U.S.C. 7491 to receive the most stringent protection from air quality degradation. Mandatory Class I Federal areas are: 1) international parks, 2) national wilderness areas which exceed 5,000 acres in size, 3) national memorial parks which exceed 5,000 acres in size, and 4) national parks which exceed 6,000 acres and were in existence on August 7, 1977. The extent of a mandatory Class I Federal area includes subsequent changes in boundaries, such as park expansions. The five Class I areas in Utah include: 1) Zion National Park, Bryce National Park, Capitol Reef National Park, Arches National Park, Canyonlands National Park.

Clearing Index - an indicator of the predicted rate of clearance of ground level pollutants from a given area. This number is calculated by the National Weather Service from daily measurements of temperature lapse rates and wind speeds from ground level to 10,000 feet.

De minimis - refers to the minimum or least.

Duff - the partly decayed organic matter on the forest floor.

Eastern Great Basin Coordination Center (EGBCC) - the center established to provide an interagency approach to wildland fire management in the area within the Eastern Great Basin Area defined as that area including state and federal agency lands within the established Forest Service Intermountain Region geographic boundary of southern Idaho; western Wyoming including the Bridger-Teton National Forest, and Teton National Park; all lands within the state of Utah; and the Arizona Strip Field Office of the BLM. Participating agencies include: the Intermountain Region of the U.S. Forest Service; the Rocky Mountain Region of the National Park Service; the Idaho, Utah, and Wyoming Offices of the Bureau of Land Management; the Phoenix, Portland, Albuquerque Area and Navajo Area Offices of Bureau of Indian Affairs; the Mountain and Prairie Region of the U.S.

Fish and Wildlife Service; the State of Idaho Department of Lands; and the State of Utah Division of State Lands and Forestry.

Emission - the act of discharge into the atmosphere of an air contaminant or an effluent that contains or may contain an air contaminant; or the effluent so discharged into the atmosphere.

Emission Reduction Techniques (ERT) – the techniques for controlling emissions from prescribed fires to minimize the amount of emission output per unit or acre burned.

Executive Secretary – means the Executive Secretary of the Air Quality Board.

Fire Prescription - the measurable criteria that define conditions under which a prescribed fire may be ignited, guide selection of appropriate management responses, and indicate other required actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social, or legal considerations.

Fuel Loading - the amount of fuel present expressed quantitatively in terms of weight of fuel per unit area. This may be available fuel (consumable fuel) or total fuel and is usually dry weight.

Land Manager - includes any federal, state, local or private entity that administers, directs, oversees or controls the use of public or private land, including the application of fire to the land.

Maintenance Area – an area that has been re-designated by EPA from nonattainment to attainment of any National Ambient Air Quality Standard.

National Ambient Air Quality Standards (NAAQS) - the standards for maximum acceptable concentrations of pollutants in the ambient air to protect public health with an adequate margin of safety, and to protect public welfare from any known or anticipated adverse effects of such pollutants (e.g., visibility impairment, soiling, materials damage, etc.) in the ambient air. National standards have been established for particulate matter, sulfur dioxide, nitrogen dioxide, ozone, carbon monoxide, and lead, and are specified in 40 CFR Part 50.

Nonattainment Area - an area which is shown by monitored data or which is calculated by air quality modeling (or other methods determined by the Administrator, EPA to be reliable) to exceed any National Ambient Air Quality Standard for such pollutant and includes any area designated as nonattainment under 42 U.S.C. 7407.

Particulate Matter - the liquid or solid particles such as dust, smoke, mist, or smog found in air emissions.

Pile - Natural materials/debris resulting from some type of fuels management practice that have been relocated either by hand or machinery into a concentrated area.

Pile Burning - Burning of individual piles.

Prescribed Fire/Prescribed Burn - any fire ignited by management actions to meet specific objectives (i.e., managed to achieve resource benefits).

Prescribed Fire Plan/Burn Plan - the plan required for each fire application ignited by managers. It must be prepared by qualified personnel and approved by the appropriate agency administrator prior to implementation. Each plan follows specific agency direction and must include critical elements described in agency manuals.

Smoke Program Coordinator – the person who is responsible for the daily operation and management of the SMP including acting as a liaison with all participating agencies, and providing the necessary information to the executive secretary to make burn approval or denial decisions.

Smoke Management - includes but is not limited to techniques to reduce emissions and smoke impacts, to identify and avoid sensitive receptors, to monitor and evaluate the smoke impacts of each burn, and to coordinate among land management agencies to minimize cumulative impacts.

Synoptic - relating to or displaying atmospheric or weather conditions as they exist simultaneously over a broad area.

Sensitive Receptors - population centers such as towns and villages, campgrounds and trails, hospitals, nursing homes, schools, roads, airports, mandatory Class I Federal areas, nonattainment areas, areas whose air quality monitoring data indicate pollutant levels that are close to health standards, etc. where smoke and air pollutants can adversely affect public health, safety and welfare.

Utah Airshed Group - a group composed of the representatives of the agencies that are signatories to the MOU, Appendix A, that are involved in the use of prescribed fire, and wildland fire use to meet land management objectives. This group meets at least once a year to evaluate the effectiveness of the SMP.

Utah Airshed Oversight Group - a group composed of managerial representatives of the agencies that are signatories to the MOU, Appendix B, that conduct performance evaluations of the Smoke Program Coordinator.

www.utahsmp.net - the home page for the Utah Interagency Smoke Management Program.

Wildfire – means any unwanted, non-structural fire.

Wildland - an area in which development is essentially non-existent, except for pipelines, power lines, roads, railroads, or other transportation or conveyance facilities. Structures, if any, are widely scattered

Wildland Fire Implementation Plan (WFIP) - a progressively developed assessment and operational management plan that documents the analysis and selection of strategies and describes the appropriate management response for a wildland fire being managed for resource benefits. A full WFIP consists of three stages. Different levels of completion may occur for differing management strategies (i.e., fires managed for resource benefits will have two-three stages of the WFIP completed while some fires that receive a suppression response may only have a portion of Stage I completed).

Wildland Fire Use (WFU) - the management of naturally ignited wildland fires to accomplish

specific prestated resource management objectives in predefined geographic areas.

Wildland Fuel - an association of naturally occurring plant materials that occur at ground, surface, and aerial strata, with the elements of distinctive species.

V. ORGANIZATION AND OPERATING PROCEDURES

A. The Utah Smoke Management Program is a cooperative effort between the DAQ and the agencies that are involved in the management of prescribed fire, wildfire, and wildland fire use to meet land management objectives. The organizational structure developed to operate the Smoke Management Program consists of a Smoke Program Coordinator, Utah Airshed Group, and Utah Airshed Oversight Group.

B. Each signatory of the MOU, Appendix A, receives full membership in the Utah Airshed Group. This group, composed of representatives of the entire membership, meets at least once a year to evaluate the effectiveness of the SMP. Specifically, the role of the Utah Airshed Group is to:

1) provide overall management direction and guidance to the Smoke Program Coordinator by functioning as an interagency steering committee to ensure appropriate implementation of the SMP;
2) review and evaluate the results of the previous burning season and prescribed fires planned for the next five years;
3) review procedures in the SMP and make revisions if necessary;
4) advise on appropriate boundaries for airsheds and impact zones (Appendix E);
5) work towards resolving inter-airshed and inter-state smoke problems;
6) review operating costs of the smoke management program;
7) provide smoke management training for agencies;
8) prepare and disseminate information on prescribed fire, wildfire, wildland fire use, and air quality; and
9) review and evaluate dispersion and emission reduction techniques**.**

C. The Smoke Program Coordinator is responsible for the daily operation and management of the SMP. The Smoke Program Coordinator responsibilities include acting as a liaison with all participating agencies, and providing the necessary information to the executive secretary to make burn approval or denial decisions. The Smoke Program Coordinator will rely on forecast meteorological information from the National Weather Service, DAQ, and others, in addition to air quality data from the DAQ's Air Monitoring Center, and burn plan information or other information from Land Managers for smoke management purposes.

Specifically, the role of the Smoke Program Coordinator will be to:

1) develop smoke forecasts for prescribed fire and wildland fire use, utilizing the information to develop zones where burning may or may not be approved, and evaluate smoke effects between zones;

2) provide ongoing coordination and communication with the DAQ and other signatory parties;

3) coordinate monitoring of compliance with National Ambient Air Quality Standards with the DAQ's Air Monitoring Center staff;

4) act as liaison with all participating agencies, developing direction for interagency cooperation;

5) assess the potential impact of wildland fuel conditions, weather and other factors on potential smoke production;
6) encourage use of appropriate technology to develop and assess potential impacts of smoke production from wildland fire use, wildfire and prescribed fire activities;
7) coordinate operations and findings with counterparts on inter-state basis;
8) coordinate with the National Weather Service, DAQ, and others to assess meteorological and climatological data to mitigate impacts from fire activities on Utah airsheds;
9) develop a database for: a) tracking whether emission reduction techniques, and smoke management objectives were met for prescribed fires and wildland fire use, b) establishing particulate matter or other air pollutant(s) emissions inventory and c) documenting contribution to NAAQS violations, if any, based on monitoring information submitted by Land Managers to the executive secretary and other data;
10) submitting an annual report summarizing the information listed in #9 to the Utah Airshed Group for review and approval by March 15 each year for the preceding calendar year; and
11) receive direction and oversight from the Utah Airshed Oversight Group.

D. Funding

Funding for the Smoke Program Coordinator position and support functions will be provided through and in accordance with the current operating agreement.

VI. PRESCRIBED FIRE REQUIREMENTS

A. Utah Annual Burn Schedule (Form 2)

1) Each calendar year, Land Managers who burn more than 50 acres per year are required to submit to the executive secretary the Utah Annual Burn Schedule (Form 2) of prescribed fires that are scheduled to be completed that calendar year, including the following information: project number, project name, Air Quality Basin, location (UTM coordinate), county, total project acres, project elevation, major fuel model, type of burn (understory, broadcast, etc.), earliest burn date, burn duration, ignition method (heli-torch, hand drip torch, etc.), and planned use of emission reduction techniques to support establishment of the annual emissions goal.

2) The proposed Utah Annual Burn Schedule (Form 2) should be submitted by March 15 each year.

B. Small Prescribed Fires (de minimis)

This category is intended for clean-up activities that have negligible air quality impacts. An annual review of this category will be conducted by the Utah Airshed Group.

1) Applicability

This category applies to:

a) prescribed fires covering up to 20 acres/day

2) Requirements

a) Ignition can occur when the National Weather Service Clearing Index is above 500.
b) Conditionally, ignition can occur when the National Weather Service Clearing Index is between 400 and 500, with approval of the Executive Secretary.
   This approval is based on fuel type, tons of emissions, proximity to sensitive receptors, downwind receptors, distance from other burning, existing air quality, and number of requests to burn within the airshed.
c) The prescribed fire should be recorded as a de minimis prescribed fire on the Utah Annual Burn Schedule (Form 2).
d) When burning with a National Weather Service Clearing Index between 400 and 500, the Land Manager is required to notify the executive secretary by fax, e-mail, or phone by 0800 hours the morning of the burn.
e) Additional reporting requirements including hourly photographs, a record of any smoke related complaints, hourly meteorological conditions and an hourly description of the smoke plume must be recorded and submitted (Optional Form 9).

3) Recommendations

a) When burning with a Weather Service Clearing Index above 500, it is recommended that the Land Manager notify the executive secretary by fax, email, or phone the morning of the burn.

C. **Small Prescribed Pile Fires (de minimis)**

This category is intended for activities that have negligible air quality impacts. An annual review of this category will be conducted by the Utah Airshed Group.

1) Applicability

This category applies to:

a) Prescribed pile fires covering up to 30,000 cubic feet/day.

2) Requirements

a) Ignition can occur when the National Weather Service Clearing Index is above 500.
b) Conditionally, ignition can occur when the National Weather Service Clearing Index is between 400 and 500 with approval of the executive secretary.

This approval is based on fuel type, tons of emissions, proximity to sensitive receptors, downwind receptors, distance from other burning, existing air quality, and number of requests to burn within the airshed.

c) The prescribed pile fire should be recorded as a de minimis prescribed fire on the Utah Annual Burn Schedule (Form 2).
d) Additional reporting requirements including hourly photographs, a record of any complaints, hourly meteorological conditions and an hourly description of the smoke plume must be recorded and submitted (Optional Form 9).
e) The Land Manager is required to notify the executive secretary by fax, e-mail, or phone by 0800 hours the morning of the burn.

D. Prescribed Fires Requiring Burn Plans--Form 3: Pre-Burn Information (prescribed fires covering more than 20 acres/day.

Land Managers are required to submit the Pre-burn Information (Form 3) in addition to the agency burn plan to the executive secretary by fax, e-mail, or mail, two weeks before the beginning of the burn window. Land Managers are required to submit the Burn Request (Form 4) to the executive secretary before the ignition of prescribed fires requiring burn plans.

1) Applicability

This category applies to:

a) prescribed fires covering more than 20 acres.

2) Pre-Burn Information

The completed Pre-burn Information (Form 3) must be submitted to the executive secretary for the evaluation of smoke management components at least two weeks before the beginning of the burn window and must contain the following information:

a) the three-letter ID, project number, date submitted, name of person submitting the form, burn manager, and phone numbers;
b) summary of burn objectives, such as restoration or maintenance of ecological functions or hazardous fuel reduction;
c) any sensitive receptor within 15 miles, including any Class I area, nonattainment area, or maintenance area, and distance and direction in degrees from the project site;
d) planned mitigation methods (avoidance, dilution, emission reduction);
e) smoke dispersion (or visibility when available) models used and results;
f) a description of how the public within the state and land managers in affected states will be notified;
g) estimated total amount of particulate matter anticipated;
h) a map depicting both the daytime and nighttime smoke path and down-drainage flow for a minimum of 15 miles from the burn site with smoke-sensitive areas delineated;
i) safety and contingency plans for addressing any smoke intrusions;
j) if the fire is in a nonattainment or maintenance area and is subject to general conformity (42 U.S.C. 7506(c), a copy of the conformity demonstration showing that the fire meets the requirements of the Clean Air Act and conforms with the applicable State Implementation

Plan;

k) planned use of emission reduction techniques to support establishment of an annual emissions goal, if not already submitted in the Annual Burn Schedule; and
l) any other information needed by the executive secretary for smoke management purposes, or for assessment of contribution to visibility impairment in any Class I area.

3) Prescribed fires that are delayed or not completed following burn approval do not need to be resubmitted to the executive secretary unless changes are made to the burn plan. Burn plans will be retained by the executive secretary until the project is completed. If an approved project is not carried out, the Land Manager will describe the reason(s) why the prescribed fire was not completed (Form 5) and submit Form 5 to the executive secretary by 0800 hours the following day.

E. **Prescribed Pile Fires Requiring Burn Plans--Form 3: Pre-Burn Information (prescribed fires <u>covering more than</u> 30,000 cubic feet/day.**

Land Managers are required to submit the Pre-burn Information (Form 3) in addition to the agency burn plan to the executive secretary by fax, e-mail, or mail, two weeks before the beginning of the burn window. Land Managers are required to submit the Burn Request (Form 4) to the executive secretary before the ignition of prescribed pile fires requiring burn plans.

1) <u>Applicability</u>

This category applies to:

a) prescribed pile fires covering <u>more than</u> 30,000 cubic feet.

2) <u>Pre-Burn Information</u>

The completed Pre-burn Information (Form 3) must be submitted to the executive secretary for the evaluation of smoke management components at least two weeks before the beginning of the burn window and must contain the following information:

a) the three-letter ID, project number, date submitted, name of person submitting the form, burn manager, and phone numbers;
b) summary of burn objectives, such as restoration or maintenance of ecological functions or hazardous fuel reduction;
c) any sensitive receptor within 15 miles, including any Class I area, nonattainment area, or maintenance area, and distance and direction in degrees from the project site;
d) planned mitigation methods (avoidance, dilution, emission reduction);
e) smoke dispersion (or visibility when available) models used and results;
f) a description of how the public within the state and land managers in affected states will be notified;
g) estimated total amount of particulate matter anticipated;
h) a map depicting both the daytime and nighttime smoke path and down-drainage flow for a minimum of 15 miles from the burn site with smoke-sensitive areas delineated;
i) safety and contingency plans for addressing any smoke intrusions;
j) if the fire is in a nonattainment or maintenance area and is subject to general conformity (42 U.S.C. 7506(c), a copy of the conformity demonstration showing that the fire meets

the requirements of the Clean Air Act and conforms with the applicable State Implementation Plan;

k) planned use of emission reduction techniques to support establishment of an annual emissions goal, if not already submitted in the Annual Burn Schedule, bearing in mind that pile burning is an emissions reduction technique; and

l) any other information needed by the executive secretary for smoke management purposes, or for assessment of contribution to visibility impairment in any Class I area.

3) Prescribed pile fires that are delayed or not completed following burn approval do not need to be resubmitted to the executive secretary unless changes are made to the burn plan. Burn plans will be retained by the executive secretary until the project is completed. If an approved project is not carried out, the Land Manager will describe the reason(s) why the prescribed pile fire was not completed (Form 5) and submit Form 5 to the executive secretary by 0800 hours the following day.

F. Burn Request (Form 4)

1) Land Managers are required to submit a Burn Request (Form 4) to the executive secretary for approval by 1000 hours two business days (Monday - Friday) before the beginning of the planned ignition, not the proposed burn window. An original form, either faxed or e-mailed are acceptable submittal. Burn requests should include the following information on the burn request form:

a) The three-Letter ID and project number consistent with the Utah Annual Burn Schedule (Form 2) submitted by March 15;

b) The date submitted and by whom; and

c) The burn manager conducting the burn and phone numbers.

2) The executive secretary will issue a decision, either approving, approving with conditions, or denying burning by 4:00 pm two business days (Monday - Friday) before the beginning of the planned ignition. The burn approval decision will be given by e-mail, fax, or recorded message. If a Land Manager is not notified of the burn approval decision by 4:00 pm, it is his/her responsibility to contact the executive secretary to determine if burning is authorized.

3) Restrictions to burning may be issued: 1) statewide, 2) by individual Air Quality Airshed(s) (Appendix E), 3) by elevation within an Air Quality Airshed, or 4) by portion of individual project.

4) The burn approval decision made by the executive secretary will be made using all available information regarding the prescribed burn, forecast meteorological conditions, and existing air quality. The criteria for making burn approval decisions include, but are not limited to:

a) Analysis of the emissions from prescribed fires in progress and residual emissions from prescribed fires on a day-to-day basis;

b) Analysis of emissions from active wildland fire use and consideration of potential long-term emissions estimates;

c) Analysis of the emissions from wildfires greater than 100 acres of timber, or 300 acres of

brush (grass, brush, pinyon/juniper);

d) Local burn conditions;

e) Fire prescription including smoke management considerations from the applicable burn plan;

f) Existing and predicted local air quality;

g) Local and synoptic meteorological conditions;

h) Type and location of areas to be burned;

i) Protection of visibility in Class I areas as required by the Regional Haze Rule (40 CFR 51.309(d)(6).

j) Minimization of smoke impacts in Class I areas, roads or highways, airports, areas that are nonattainment for particulate matter (Appendix E), carbon monoxide nonattainment areas, or other sensitive areas;

k) Protection of the National Ambient Air Quality Standards (NAAQS) pursuant to 40 CFR Part 50; and

l) Analysis of smoke transported from areas outside of Utah.

5) The burn approval decision made by the executive secretary can be rescinded at any time, as outlined in Section IX, Part A, Management of On-going Fires.

6) Once a burn request has been approved by the executive secretary the notification of ignition falls on the Land Manager. The Land Manager must contact the executive secretary by phone, fax or email each day of the burn window during which ignition has or will not take place.

G. Daily Emission Report (Form 5) For Fires Requiring Burn Plans or For Fires Not Completed

By 0800 hours the day following the burn, Land Managers are required to submit a Daily Emission Report (Form 5) for each day of significant prescribed fire activity (covering more than 20 acres) to the executive secretary. The Daily Emission Report (Form 5) will be used by the Smoke Program Coordinator to generate an annual report of fire activities. If a burn is not carried out, the Daily Emission Report (Form 5) will be used the following morning by 0800 hours to document why a burn was not carried out. The report will include the following information:

1) The three-letter ID and project number consistent with Form 2;
2) Date submitted and by whom;
3) Burn starting date and ending date including time of burn;
4) Emission information (black acres, tons fuel consumed per acre, and tons particulate matter produced);
5) Public interest regarding smoke;

6) Daytime ventilation;
7) Nighttime smoke drainage;
8) Evaluation of the techniques (Appendix A) used by the land manager to reduce emissions or manage the smoke from the prescribed burn;
9) Emission reduction techniques applied; and
10) Optional information on dead and live fuel moisture information with average depth of fuels.

H. Surveillance/Enforcement

1) Land Managers conducting a prescribed fire will permit DAQ staff to enter and inspect burn sites before, during and after burns, to verify the accuracy of the permit or burn plan information and compliance with the burn plan, if appropriate. Site inspection procedures will be coordinated through the DAQ and the Land Manager for safety purposes prior to any site inspections.

2) All parties are committed to comply with the Clean Air Act and the best management practices available regarding emission production and reduction, and regional haze issues.

3) Failure to comply with the procedures and conditions specified in the permit or burn plan may result in an enforcement action, such as, a cease and desist order.

I. Monitoring

1) Land Managers will monitor effects of the prescribed fire on sensitive receptors, and visibility in Class I areas. Visual monitoring and documentation of the direction of the smoke plume may be performed using the Hourly Plume Observation Record (Form 6) or your agency equivalent, as needed. Monitoring of nuisance complaints by the public should be noted and recorded in the project file.

2) For large fires expected to last more than one day, or fires close to sensitive receptors, locating real-time particulate matter monitors at sensitive receptors may be warranted to facilitate timely response to smoke impacts. The DAQ will assist in identification of instrumentation, site selection, installation of instrumentation, operation, calibration, quality assurance, quality control, laboratory analysis, data interpretation and supplies. Current technology in the area of monitoring smoke particulates requires setup and calibration of equipment.

3) Land Managers will document pertinent information that may lead to improved future operations and a better understanding of smoke accumulation problems, impacts, and solutions as it pertains to prescribed fires that require burn plans. This evaluation will be included in the Daily Emission Report that is submitted to the executive secretary.

4) DAQ staff will forward to the Land Manager any complaint calls that are received as a result of smoke intrusions.

VII. Wildfire Requirements

A. Evaluation of Wildfire

1) The Smoke Program Coordinator will review the daily situation report for Utah (prepared by the Eastern Great Basin Coordinating Center) to identify wildfires on more than 100 acres of trees (timber) or 300 acres of brush (grass, brush, pinyon/juniper). Analysis of the emissions from wildfires in progress and residual emissions from prescribed fires, wildfires, and wildland fire use will be used to evaluate smoke impacts on air quality and visibility.

2) The Smoke Program Coordinator will review the daily situation report for Utah (prepared by the Eastern Great Basin Coordinating Center) to track emissions of particulate matter or other pollutants of interest from wildfires for the emissions inventory database.

VIII. Wildland Fire Use Requirements

A. Burn Approval Requirements for all Wildland Fire Use

1) Land Managers will notify the executive secretary of any potential wildland fire use (WFU) having a stage 1 wild fire implementation plan (WFIP). The following information will be provided:

a) Location of the fire (UTM Coordinate);
b) Active burning acres;
c) Probable fire size and anticipated daily growth in acres;
d) Type(s) of wildland fuel involved;
e) An emergency telephone number that is answered 24 hours a day; and Wilderness or Resource Natural Area designation, if applicable;
f) Distance to nearest community;
g) Elevation of fire;
h) Fire's Airshed number.

2) Land Managers will notify the executive secretary of any potential wildland fire use (WFU) covering more than 20 acres or having a stage 2 WFIP. In addition to the information required for a WFU with a stage 1 WFIP, the following additional requirements must be met:

a) The executive secretary will be involved in the planning and decision making process for on-going WFU. The following information will be submitted to the executive secretary as it is being developed (federal fire policy allows 48 hours):

i) Wildland Fire Implementation Plan (WFIP) and anticipated emissions;
ii) A map depicting both the daytime and nighttime smoke path and down-drainage flow for a minimum of 15 miles from the burn site with smoke-sensitive areas delineated; and
iii) Additional computer smoke modeling, if requested by the executive secretary.

b) The executive secretary will then approve or disapprove the smoke management element of

the WFIP after consulting with the Land Manager within 3 hours of receipt of the WFIP. This decision will be based on current prescribed fire, wildfire, wildland fire use, forecast meteorological conditions, and existing air quality information using the criteria on page 10, Section VI.C.(4). The Land Manager will provide daily updates to the executive secretary at DAQ if the fire is managed for wildland fire use as long as the fire remains active (>20 acres/day).

B. Daily Emission Report for WFU

By 0800 hours the day following significant activity of 50 acres or more, the Land Manager will submit the Daily Emission Report or equivalent (Form 5) to the executive secretary. The Daily Emission Report will be used by the executive secretary to make operational decisions for the scheduling of burns. The report will include the following information:

1) The three-letter ID, project number, Air Quality Basin, and name of Burn Manager;
2) Location (UTM Coordinate);
3) Dates of burn with 24 hour time (start day/time, end day/time);
4) Black acres by wildland fuel type;
5) Estimated wildland fuel consumption (%) by wildland fuel type;
6) Wildland fuel moisture (%) by size class;
7) Emission estimates using emission factors provided by DAQ;
8) Level of public interest/concern regarding smoke; and
9) Conformance to WFIP.

C. Monitoring

1) Land Managers conducting wildland fire use will monitor effects of the fire on sensitive receptors, and visibility in Class I areas, and conformance to WFIP. Monitoring of nuisance complaints by the public should be recorded in the project file.

2) Land Managers will document information pertinent to the wildland fire use that leads to improved future operations and a better understanding of smoke accumulation problems, impacts, and solutions. This evaluation will be included in the Daily Emission Report that is submitted to the executive secretary.

3) DAQ staff will forward to the Land Manager any complaint calls that are received as a result of smoke intrusions.

IX. Requirements for Prescribed Fires, Wildland Fire Use, or Wildfires

A. Management of On-going Fires (Prescribed Fires/WFU)

If after consultation with the Land Manager(s), the executive secretary determines that a prescribed fire, wildland fire use, wildfire, or any smoke transported from other locations, is degrading air quality to levels that could violate the National Ambient Air Quality Standards or burn plan conditions, the Land Manager(s) will promptly stop igniting additional prescribed fires.

B. Public Notification/Education (Prescribed Fires/WFU/Wildfires)

1) The Land Managers and DAQ will be responsible for providing public notification and education related to the SMP, as needed. The public notification and education program will include smoke impacts from prescribed fires, wildfire, and wildland fire use.

2) The Land Managers and DAQ will be responsible for providing public notification and education on the role of prescribed fire and wildland fire use to accomplish land management objectives.

3) The DAQ and National Weather Service will be responsible for issuing health advisories and forecast air quality alerts in accordance with existing state and federal laws as appropriate.

X. Program Management

A. Form Processing and Submittal Times

Smoke Management Plan forms are available at www.utahsmp.net under the section titled "Forms". Preferably, all forms should be submitted through the home page submittal functions. The Land Manager should keep a copy of the completed form in case an error occurs and a fax is required. Submittal of the forms is as follows:

Form 1:	Project Number	(Optional)
Form 2:	Utah Annual Burn Schedule	Due by March 15 annually
Form 3:	Pre-Burn Information	Due two weeks before beginning burn window
Form 4:	Burn Request	Submit two business days before planned ignition
Form 5:	Daily Emission Report	Submit by 0800 hours the day following burn
Form 6:	Hourly Plume Observation Record	(Optional)

B. Updates to SMP Home Page

Updates to the SMP home page will be routinely shown under the "What's New in Smoke" section of the main page. Procedural changes will be highlighted to keep the page user friendly.

Utah Smoke Management Program Home Page Address

www.utahsmp.net

Executive Secretary

Richard Sprott, Director
Division of Air Quality

150 N. 1950 W.
SLC, UT 84116

Smoke Program Coordinator

Greg Zschaechner
Division of Air Quality
150 N. 1950 W.
Salt Lake City, Utah 84114-4820
gzschaechner@worldnet.att.net
(801) 539-4151 (phone)

SMP Correspondence:

Executive Secretary
Division of Air Quality
150 North 1950 West
Salt Lake City, Utah 84114-4820
(801) 536-0031 (fax) (801) 536-0085 (back-up fax)

Utah Airshed Group

Linda Chappell
US Forest Service
(435) 896-1595 (phone)
lchappell@fs.fed.us

Dave Dalrymple
Department of Natural Resources
(801) 538-5501 (phone)
davedalrymple@utah.gov

Jan Passek
National Park Service
(435) 772-0188 (phone)
jan_passek@nps.gov

David E.B. Strohm, II
Division of Air Quality
(801) 536-4056
dstrohm@utah.gov

Bob Rebarchik
U.S. Fish & Wildlife Service
(406) 329-4749
bob_rebarchik@fws.gov

J. Bradley Washa
Bureau of Land Management
801-539-4246 (desk) 801-558-6998 (cell)
Brad_Washa@blm.gov

Appendix A

Emission Reduction & Dispersion Techniques

Each Land Manager conducting prescribed fires will implement as many emission reduction and dispersion techniques as feasible for individual prescribed fires. A list of proposed emission reduction techniques for individual prescribed fires will be included in the Annual Burn Schedule or Pre-Burn Information form to support establishment of the Annual Emissions Goal. An evaluation of the techniques used by the land manager to reduce emissions (ERT) or manage the smoke from the individual prescribed fires will be included in the Daily Emission Report submitted by Land Managers to the executive secretary. The following is a list of emission reduction (ERT) and dispersion techniques that may be used by Land Managers:

1) Reducing biomass by use of techniques such as yarding or consolidation of unmerchantable material, multi-product timber sales or public firewood access, when economically or practically feasible, and providing information to the public on the adverse impacts of using green or wet wood as fuel;

2) Burning during burn windows that are characterized by meteorological conditions that allow for good smoke dispersion;

2) Using mass ignition techniques such as aerial ignition by helicopter to produce high intensity fires with short duration impacts;

4) Igniting burns under good-to-excellent ventilation conditions and suspending operations under poor smoke dispersion conditions;

5) Considering smoke impacts and residual smoke on activities conducted by local communities and land users;

6) Burning only those wildland fuels essential to meet management objectives;

7) Minimizing duff consumption, smoldering, and large wildland fuel consumption through wildland fuel moisture considerations;

8) Minimizing dirt content when slash piles are constructed by using brush blades on material-moving equipment and by constructing piles under dry soil conditions or by using hand piling methods;

9) Burning piles when other burns are not feasible, such as when snow or rain is present;

10) Using opportunities that meet the burn prescription at all burn locations to spread smoke impacts over a broader time period and geographic area to minimize smoke impacts to protect public health, public safety and visibility;

11) Burning during optimum periods to prevent trapping smoke in inversions or diurnal wind flow patterns;

12) Consolidating burning material to enhance wildland fuel consumption and to minimize smoke production;

13) Implementing maintenance burning in a periodic rotation mimicking natural fire cycles to reduce excessive wildland fuel accumulations and subsequent excessive smoke production through smoldering or wildfire;

14) Managing smoke impacts by: a) minimizing smoke impacts to roads, highways, and airports to the amounts, frequencies, and durations consistent with any guidance provided by highway and airport personnel; and b) minimizing smoke impacts to Class I areas, areas that are nonattainment for particulate (Appendix F), carbon monoxide nonattainment areas, or other smoke sensitive receptors; and

15) Utilizing WFU when feasible to limit smoke impacts from wildfires and reduce fuel loading.

Appendix B

Utah
Enhanced Smoke Management Plan
December 18, 2003

Table of Contents

I. PURPOSE

The purpose of this Utah Enhanced Smoke Management Plan (ESMP) is to identify the responsibilities of the Utah Division of Air Quality (UDAQ) and Federal, and State land managers (Land Managers) to coordinate procedures that mitigate the impacts of prescribed and wildland fire use (WFU) fires on visibility in mandatory Class I areas. This plan is designed to meet the requirements of Section 309 of the federal Regional Haze Rule (Rule). As burning activity increases, Land Managers and UDAQ may consider strengthening the ESMP as needed to reduce impacts on visibility in Class I areas.

This ESMP is an addendum to the Utah Smoke Management Plan (Utah SMP) and may be revised as needed at the end of the 2004 burning season and each year thereafter with the concurrence of all signatories to the Utah SMP.

II. GOALS

- To minimize or prevent smoke impacts to such a degree as possible to protect visibility in mandatory Class I areas
- To develop an ESMP that is based on the criteria of efficiency, economics, law, emission reduction opportunities, land management objectives, and reduction of visibility impacts in accordance with the Rule

III. SCOPE

The ESMP provides direction and operating procedures for Land Managers involved in the use of prescribed and WFU fires. The ESMP was developed cooperatively by all signatories to the Utah SMP and applies to those signatories uniformly across the state of Utah.

IV. DEFINITIONS (In addition to definitions in Utah SMP)

Annual Emissions Goal – the annual establishment of a planned quantitative value of emissions reductions from prescribed fire.

Emission Reduction Techniques – techniques for controlling emissions from prescribed fires to minimize the amount of emission output per unit or acre burned.

Non-burning Alternatives to Fire – non-burning techniques that are used to achieve a particular land management objective, including but not limited to: reduction of fuel loading, manipulation of fuels, enhancement of wildlife habitat, and ecosystem restructuring. These alternatives are designed to replace the use of fire for at least the next five years.

V. ELEMENTS OF UTAH ENHANCED SMOKE MANAGEMENT PLAN

A. Actions to Minimize Emissions from Fire

There are a variety of different methods to minimize emissions from fire depending upon the fire source and management objectives. Utah's ESMP focuses on three general approaches to minimize emissions: use of emission reduction techniques, establishing emissions goals, and use of burn manager qualification programs.

Emission Reduction Techniques

An emission reduction technique is a technique for controlling emissions from prescribed fires in order to minimize the amount of emissions produced per acre or unit burned. Research has shown that fire emissions can be minimized through the use of emission reduction techniques that increase combustion efficiency and reduce the smoldering stage of burning. There are six general categories of emission reduction techniques: reduction of burn area, reduction of fuel load, reduction of fuel production, reduction of fuel consumed, scheduled burning prior to the appearance of new fuels (green-up), and increasing combustion efficiency. Under the ESMP, Land Managers will utilize the above emission reduction techniques as appropriate to minimize fire emissions as well as document the techniques used in their Daily Emissions Report. The Annual Emission Goals for Fire will specify the types of emission reduction techniques to be utilized on a project specific basis.

Emissions Goals

As required by the Rule, an annual emission goal will be established to minimize emission increases due to fire. The emission goal will be established prior to the beginning of the fire season, either at the beginning of the year or before the year begins. The emission goal will be established for the upcoming fire projects in cooperation with states, federal land management agencies, and private entities.

The quantified benefit from the use of emission reduction techniques constitutes the annual emission goal. To establish the goal, emission reduction techniques will be determined using feasibility criteria for the upcoming prescribed fire projects, and then the benefit from using the technique(s) will be quantified. At the end of the fire season, an assessment will be made of the techniques applied during the previous fire season to verify application.

Burn Manager Qualification Programs

Burn manager qualification programs have been developed by federal and state land management agencies that use prescribed fire as a management tool. These burn manager qualification programs include information on emission reduction techniques and non-burning alternatives to fire as well as implementation issues. The benefit of a burn manager

qualification program is to certify that the land manager is knowledgeable of alternative burning practices and emission reduction techniques and has the experience to implement them. Under the ESMP, Land Managers will update the information presented on alternative burning practices and emission reduction techniques as research improves.

B. Evaluation of Smoke Dispersion

Under the ESMP, smoke dispersion techniques such as dilution (burning during periods of good atmospheric dispersion) and avoidance (transporting smoke away from sensitive areas) will be used to reduce impacts on visibility in Class I areas. An evaluation of smoke dispersion will be made using the following tools and methods: scheduling or burn authorization of prescribed fires to minimize cumulative effects of smoke from fires on visibility in Class I areas, burner qualification and certification programs, use of dispersion modeling (to assist in the evaluation of dispersion conditions), and use of field level data, (e.g., wind direction, distance to receptors).

Burn Authorization Process

Under the Utah SMP, burn authorization decisions are based on meteorological information, national fire databases, shared information sharing from adjoining states, and air quality monitoring information from UDAQ monitoring stations.

Meteorological information is gathered from the National Weather Service (NWS), University of Utah modeling programs, and various satellites. The NWS office issues the Utah Airshed Clearing Indices, a predictor of how quickly pollutants dissipate in an area, and other weather forecast information. The University of Utah provides a link to the MM5 modeling program that supplies ventilation data. Satellite information gives various views of cloud development and paths, and progress of frontal systems.

Daily reports from national fire databases such as the National Incident Coordinator Center (NICC) supplies information on wildland fires including WFU fires throughout the country.

Air quality monitoring information is gathered from the UDAQ's Monitoring Center's website that provides readings of particulate matter levels along the Wasatch Front.

All of the above information is utilized in the burn authorization process that is an essential element of the Utah SMP. Under state administrative rule, R307-204, Land Managers are required to submit pre-burn information including information on proximity to Class I areas, and burn requests to the executive secretary prior to conducting a burn. No prescribed fires requiring a burn plan can be ignited before the executive secretary approves or conditionally approves the burn request.

Under the ESMP, Land Managers are required to submit information on the proximity of Class I areas to the proposed burns to allow for the scheduling of prescribed burns to reduce the impacts on visibility in Class I areas and the generation of regional haze.

Burn Manager Qualification and Certification Programs

Burn manager qualification and certification programs have been developed and are being used

by federal and state land management agencies that use prescribed fire as a management tool. These burn manager qualification programs include information on the relationships between weather and smoke dispersion. The benefit of a burn manager qualification program is to certify that the land managers understand the factors affecting smoke behavior and, therefore, may make better decisions regarding burn timing which will reduce the impacts of smoke on visibility in Class I areas. Under the ESMP, Land Managers will update the information presented on weather and smoke dispersion as research improves.

Dispersion Modeling

Under the ESMP, smoke dispersion modeling may be conducted by Land Managers to evaluate smoke behavior if there is a concern about potential smoke impacts from a proposed prescribed burn(s). This tool could be used in the planning and implementation process in order to determine the cumulative effects of multiple burns.

Field Level Data

State administrative rule, R307-204, requires Land Managers to submit pre-burn information for approval prior to ignition. The pre-burn information identifies any sensitive receptor, including any Class I or nonattainment area within 15 miles, distance and direction of the sensitive receptor in degrees from the project site, and a map that shows the daytime and nighttime smoke path and down-drainage flow for a minimum of 15 miles from the burn site. This map, as well as the fire prescription that is prepared by the Land Manager provides field level data that is essential for supporting the dispersion estimation process.

C. Alternatives to Fire

Alternatives to fire are techniques that replace fire as a means to achieve a particular land management objective (e.g., reduction of fuel-loading, manipulation of fuels, enhancement of wildlife habitat, ecosystem restoration, etc.). Under the ESMP, non-burning alternatives to fire do not include techniques used in conjunction with fire.

Land Managers typically evaluate the use of alternatives to fire in programmatic or long-term management plans. Federal land managers evaluate non-burning alternatives to fire in programmatic plans as a requirement of the National Environmental Policy Act (NEPA). Therefore, the decision to use fire or non-burning alternatives to fire has been determined prior to development of the operational-level plan or burn plan.

Under the Utah ESMP, the types of non-burning alternatives to fire and the acres treated during the previous calendar year will be summarized annually using newly developed land manager databases. The summary will provide documentation of the types of non-burning alternatives utilized by the Land Managers annually and the acres treated.

D. Public Notification

The Utah SMP and state administrative rule, R307-204, emphasize the importance of public notification by requiring Land Managers to notify the public of upcoming fire activities. In addition, public notification information is a component of burn plans that are developed by state and federal land managers.

Under the Utah ESMP, a one-stop information center will be added to the existing Utah SMP website to provide a list of upcoming projects as a means to notify the public about prescribed fire or wildland fire projects. This tool would provide another means for information dissemination.

E. Air Quality Monitoring

The Utah SMP and state administrative rule, R307-204, requires land managers to monitor the effects of prescribed fires on smoke sensitive receptors, and visibility in Class I areas using either visual monitoring or sampling equipment.

Under the ESMP, visual monitoring will be used in areas of little burn activity or areas located farther away from Class I areas. UDAQ in cooperation with Land Managers may consider conducting a more widespread and comprehensive monitoring program as fire activity increases. The use of cameras, satellite imagery and aerial monitoring to track and document smoke movement could be considered. The use of IMPROVE monitored data may have to be supplemented by air quality monitoring outside of Class I areas to track smoke movement.

Under the ESMP, a description of the monitoring equipment that is available, location of equipment, and equipment training opportunities will be added to the existing Utah SMP website as an aid to Land Managers.

F. Surveillance and Enforcement

State administrative rule, R307-204, establishes by rule the procedures that Land Managers are required to follow to mitigate impacts on public health and visibility of prescribed and wildland fire use (WFU) events. Failure to comply with the state rule may result in an enforcement action, such as a notice of violation or cease and desist order.

Under the ESMP, Land Managers will permit UDAQ staff to enter and inspect burn sites before, during, and after burns to verify the accuracy of the burn plan and compliance with the burn plan, if appropriate. For safety purposes, site inspection procedures will be coordinated by the UDAQ through the land manager prior to any site inspections.

G. Program Evaluation

The ESMP will be reviewed for effectiveness by the UDAQ in cooperation with the Land Managers on an annual basis. In addition, the Rule requires progress reports every five years to EPA describing how well the enhanced smoke management program is being implemented as needed to meet reasonable further progress requirements. Annual evaluations of the overall smoke management program will provide the information needed for periodic reports.

The following elements of the ESMP will be evaluated during annual evaluations:

- Implementation
- Burn activity summaries
- Smoke complaint summaries
- Compliance and enforcement
- Sections needing clarification or improvement
- Progress towards goals including visibility improvement/impact reduction
- Recommendation for revisions

- Scientific advancements

H. Burn Authorization

State administrative rule, R307-204, requires Land Managers to submit pre-burn information for approval by the executive secretary prior to ignition of prescribed fires. This inter-state burn authorization program utilizes meteorological information, prescribed burn information, and updates of fire activity in adjoining states to schedule burns to avoid impacts of smoke on public health. Under the ESMP, Land Managers are required to identify whether a Class I area may be impacted by a burn prior to ignition. This additional information on potential impacts on visibility in Class I areas will be utilized within the burn authorization program to prevent cumulative impacts of smoke to visibility in Class I areas from prescribed and WFU fires within Utah boundaries.

I. Regional Coordination

Under the SMP, notification of upcoming prescribed fires and approved WFU projects are provided to adjoining states for coordination purposes. This process of information sharing is important to help adjoining states that have burn authorization programs prioritize their prescribed burn projects.

Likewise, information on upcoming prescribed, WFU, and wildland fire projects in neighboring states is utilized for burn scheduling purposes within Utah boundaries to reduce smoke impacts on public health. This information is gained from national databases such as the National Incident Coordination Center (NICC) report, and phone calls and emails from adjoining states.

Under the ESMP, information on prescribed, WFURB, and wildland fire projects in neighboring states will be utilized for burn scheduling purposes within Utah boundaries to reduce cumulative smoke impacts on visibility in Class I areas within Utah. Smoke from wildland fires are more likely to be of longer duration and have the greater potential for impacts on visibility in Class I areas and generating regional haze.

In the future, it may be necessary to develop and implement a regional coordination center to prioritize burns in areas that would be most likely to create cross-jurisdictional impacts. To do so, regional meteorological and air quality information would be shared in order to produce regional approval and real-time tracking of burns and their smoke impacts.

New modeling tools, such as BlueSKY, are being developed that provide smoke column footprints and estimates of smoke concentrations. These tools will be useful for regional coordination efforts.

J. Evaluation Criteria

According to the Rule, enhanced smoke management programs are to be based on the criteria of efficiency, economics, law, emissions reduction opportunities, land management objectives, and reduction of visibility impacts. These criteria will determine the extent to which individual elements of the enhanced smoke management program are applied or the level of effort that is possible. The enhanced smoke management program criteria are listed below including some options on how to apply each criterion:

Efficiency: Consider the resources, infrastructure, networking, workforce, and information necessary to reduce visibility impairment in mandatory Class I areas. It may be feasible to share these items with another group in order to reduce redundancy or build on existing expertise.

Economics: After evaluating the items listed under Efficiency, consider the costs and incentives of those items. If possible, quantify the improvements to regional haze in a local area. Consider the economic trade-off of moving fuels off-site to be converted to another use or burned elsewhere. Consider the economic costs to a landowner to look for emission reduction alternatives. Consider the economic gains from improved habitats, functioning watersheds, species diversity and healthy ecosystems. Consider the economic losses to a community associated with impairment.

Law: Consider the federal, state, tribal ordinances, local rules or statutes that prohibit mechanical treatments or prohibit the regulation of burning. Consider conflicts with management or law pertaining to the Threatened and Endangered Species Act and/or the Wilderness Act.

Emission Reduction Opportunities: Consider opportunities for reducing emissions through mechanical, biological, or chemical means. Consider places where reducing emissions will be best done through smoke management techniques rather than moving fuels off-site or manipulating fuels through chemicals or biological decomposition or a combination of mechanical treatments and maintenance burning.

Land Management Objectives: Consider whether manipulating fuels is not an option because of land management objectives, e.g. tribal cultural values, wildlife habitat, crop requirements, residue removal constraints, or inaccessible terrain. Consider whether manipulating fuels is more conducive to the land management objective, e.g., areas targeted for commodity production, watershed protections or tribal cultural activity sites. Consider whether restoration of ecosystem function is a high priority.

Reduction of Visibility Impacts: Consider how the ESMP will decrease visibility impacts on Class I areas, using the current information and science that is available.