

Alaska Department of Environmental Conservation



Amendments to:
State Air Quality Control Plan Volume III: Appendix III.K.8

Alaska Enhanced Smoke Management Plan

Appendix to Section III. K: Areawide Pollutant Control Program
for Regional Haze

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Alaska
Enhanced Smoke Management Plan for Planned Fire
Procedures Manual
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ALASKA ENHANCED SMOKE MANAGEMENT PLAN

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1. INTRODUCTION

The Alaska Department of Environmental Conservation (DEC) in coordination with the Alaska Wildland Fire Coordinating Group (AWFCG) has led the development of Alaska's Enhanced Smoke Management Plan (ESMP). The ESMP and accompanying volume of appendices has been adopted by DEC and participating wildland owners and managers through a Memorandum of Understanding (MOU).

This document is an updated version of the previous plan, which was approved in June 2015, and fulfills the U.S. Environmental Protection Agency (EPA) requirement, as outlined in the Interim Policy on Wildland and Prescribed fires, to review the ESMP every five years. The 2015 version of the ESMP was included as a component of the Alaska Regional Haze State Implementation Plan (RH SIP)

The ESMP provides accurate and reliable guidance and direction to and from not only the fire authorities who use prescribed fire as a resource management tool but also to the private landowners and corporations who conduct land clearing burns. This ESMP describes and clarifies the relationship between fire authorities and DEC. These agencies must work together effectively to combine planned burning, resource management, and development with smoke, and public health with Class I area visibility goals.

The ESMP Appendices provide additional assistance for interagency sharing of information, the applicability and availability of current smoke management techniques, monitoring protocol, public education strategies, and emission reduction techniques. The ESMP Appendices include up-to-date techniques and tools (e.g. monitoring equipment, modeling, emission factors) available through the Western Regional Air Partnership (WRAP) and member organizations tasked with assisting states, tribes, and land managers with smoke management.

Alaska's ESMP will be evaluated annually by the AWFCG and interested parties and revised at least every 5 years in accordance with EPA's Interim Policy on Wildland and Prescribed fires. The ESMP appendices will be updated as new information becomes available, but not more often than once a year.

2. REGULATORY PURPOSE

The ESMP helps fulfill Alaska's responsibilities for protection of air quality and human health under federal and state law and reflects the Clean Air Act (CAA) requirement to improve regional haze in Alaska's Class I areas. The Regional Haze Rule (RH Rule) requires that visibility at Class I areas be returned to natural background conditions by 2064. Alaska adopted its first State Implementation Plan (SIP) for regional haze on February 11, 2011. EPA published its final approval of the plan in the Federal Register on January 7, 2013. The next RH SIP is currently due July 31, 2021. The updates in this plan include requirements from the January 10, 2017, RH update, and the 2016 EPA amendment to the Exceptional Events Rule (October 3, 2016) and associated guidance.¹

¹ Prescribed Fire on Wildland that May Influence Ozone and Particulate Matter Concentrations, August 8, 2019 (<https://www.epa.gov/air-quality-analysis/exceptional-events-guidance-prescribed-fire-wildland-may-influence-ozone-and>)

Future updates to this smoke management plan may be necessary to address additional fire tracking and emission management needs based upon policies and guidelines. Updates will be incorporated into the next RH SIP update, as will any future updates to the ESMP.

This ESMP update also addresses the Exceptional Event guidance for Exceptional Events Rule signed on September 16, 2016, and the Exceptional Events Rule Guidance - Prescribed Fire on Wildland that May Influence Ozone and Particulate Matter Concentrations, August 8, 2019.

Adoption of this document enables the state to certify to the EPA that we are implementing a smoke management plan that addresses elements of the EPA's Interim Air Quality Policy on Wildland and Prescribed Fire, April 23, 1998 (EPA's Interim Policy). If states do not certify that a basic smoke management plan is being implemented, EPA will not provide special consideration to particulate matter (PM) health standard violations attributed to fires managed for resource benefits. According to EPA's policy, a state adopted ESMP enables EPA to use its discretion in deciding to reclassify an area as nonattainment when fires cause or contribute to PM air quality violations. If EPA does indeed reclassify an area, then states need to review the adequacy of their ESMP to make appropriate improvements in cooperation with wildland owners and managers.

Alaska Wildfire Coordinating Group (AWFCG) Guidelines, Membership Criteria and Responsibilities

The AWFCG, formed in 1994 through the consolidation of the Alaska Multi-Agency Coordinating Group and the Alaska Interagency Fire Management Council, provides a forum that fosters cooperation, coordination, and communication for wildland fire and for planning and implementing interagency fire management statewide. The AWFCG membership includes state, federal, municipal and native land management agencies and owners that have fire management responsibilities (Appendix A).

One of the objectives of the AWFCG Air Quality and Smoke Management subcommittee is to provide a forum for anticipating smoke intrusions, resolving on-going smoke management issues, and improving smoke management techniques. Another objective is to ensure that prescribed fire, as a tool to reduce risk and future smoke emissions, is considered by DEC when promulgating policy, procedures, and regulations.

The AWFCG establishes committees and workgroups to address specific issues. Since smoke management is a critical and continuous issue in statewide fire management, the AWFCG established the Smoke Management and Air Quality Committee (AQ Committee). The purpose of the committee is to address the AWFCG smoke management objectives; assist DEC with the development and revision of the Alaska ESMP for prescribed fire; and to disseminate policies, procedures, and regulations related to smoke management. AWFCG members may provide representatives to serve on the AQ Committee. Participation is not mandatory. The DEC representative serves as Committee Chair. Each agency or organization representative is the point of contact for communicating information between the AQ Committee and their agency or organization. The agency or organization representatives are responsible for assisting agency or organization personnel with pre-season permit applications and post-season reporting. The responsibilities of the AQ Committee include assisting in development of the ESMP and reviewing the effectiveness of the plan. An annual fire emissions report has been prepared by

DEC with the AQ Committee for submittal and approval to the AWFCG since 2009.

DEC also participates in the Fire Education and Prevention Committee which is responsible for interagency coordination and development of fire prevention and education materials. This committee works together to manage public messaging and provides an opportunity for smoke management and air quality message development.

The following elements of the ESMP will be reviewed by DEC on an annual basis to determine if plan revisions are needed:

- Implementation and agency coordination
- Burn activity summary
- Smoke complaint summaries
- Compliance and enforcement
- Scientific and technological advancements
- Sections needing clarification and improvement
- Recommendation for revisions

Changes to DEC's open burn regulations (18 AAC 50) may occur if DEC deems it necessary. All changes to state regulations must follow standard procedure, including a public comment period. Regulatory changes that affect prescribed burning in the state will be done in coordination with the AWFCG members and any other affected parties. It will be up to DEC to ensure that stakeholders are informed of any anticipated changes. The current DEC regulations and Open Burning Policy and Guidelines are contained in Appendix B. Changes to the ESMP MOU document can only be made after contacting each signatory in writing.

Enhanced Smoke Management Plan

The purpose of the ESMP is to provide a clear and equitable regulatory basis for smoke management in Alaska. DEC is responsible for protecting the health and welfare of Alaskans from the impacts of smoke from fire as well as protecting visibility according to federal RH rules. The ESMP assists DEC in meeting these requirements. In order to ensure the ESMP is successful, DEC is responsible for the following:

- Developing and implementing the ESMP.
- Reviewing controlled burn approval applications to ensure they comply with state air quality regulations (18 AAC 50.065) and ESMP guidelines and issue approvals.
- Collecting, reviewing, tracking and summarizing statewide pre- and post-burn data for triennial ESMP emission inventory reports to be distributed to AWFCG, EPA (on a triennial basis), and the public.
- Ensuring that field oversight and enforcement is conducted and is uniformly applied.
- Coordinating with the AQ Committee members to establish and facilitate support for smoke management techniques and mitigation strategies within the state.
- Ensuring that the ESMP is understood and communicated to all land management agencies and the AWFCG.
- Facilitating AQ Committee meetings to evaluate the program effectiveness, review policies, discuss new smoke management methods, approve air quality reports to be submitted to the AWFCG for approval, and help solve agency smoke management issues

DEC staff will notify health authorities, news media, the public-at-large, land management agencies, and all other appropriate agencies when unacceptable limits of smoke accumulation are approached or exceeded. DEC staff will restrict implementation of controlled burn approvals in specific areas, request burn suppression actions, or request air quality burn bans or restrictions when meteorological or existing air quality conditions so warrant (i.e., if weather forecasters predict undesirable wind conditions and/or smoke is drifting into sensitive areas).

2.1 ESMP Requirements

EPA Exceptional event regulations² and guidance³ requires the following elements to be included in a state smoke management plan:

1. authorization to burn,
2. smoke management components of burn plans,
3. minimizing air pollutant emissions,
4. public education and awareness,
5. surveillance and enforcement, and
6. program evaluation.

2.2 Authorization to Burn

Under state regulation, all agencies, corporations, and individuals that burn areas larger than forty acres of land a year, whether slash or in situ, require a controlled burn approval application and written approval from DEC. Similarly, the Alaska Department of Natural Resources (DNR) Division of Forestry (DOF) issues large scale burning permits for land clearing agricultural fires that occur on all state, municipal, borough, city, and private parcels not covered under local or federal laws. Other federal land management (FLM) agencies, private landowners, and corporations may also issue permits for prescribed burning and land clearing.

The ESMP outlines the process and identifies issues that need to be addressed by DEC, DNR, and other land management agencies or private landowners/corporations to help ensure that prescribed fire (e.g., controlled burn) activities minimize smoke and air quality problems.

DEC manages open burns to minimize health impacts from smoke and keep Alaska's air clean. Open burning regulated by DEC includes residential, agricultural, development land clearing fires, land management fires, incinerators that do not meet emission standards in 18 AAC 50.050, and fire fighter training with fuel and structures. These open burns are regulated and permitted through the open burn permit application process. Prescribed and land clearing fires require written DEC approval before starting the burn if the intent is to burn, or clear and burn, 40 acres or more during a year in the same locale.⁴ Open burning is prohibited in the Fairbanks fine particulate matter nonattainment area and the Juneau Wood Smoke control areas between

² FR Vol 81, No. 191 / October 3, 2016

³ Prescribed Fire on Wildland that May Influence Ozone and Particulate Matter Concentrations, August 8, 2019 (<https://www.epa.gov/air-quality-analysis/exceptional-events-guidance-prescribed-fire-wildland-may-influence-ozone-and>)

⁴ <http://dec.alaska.gov/air/air-permit/open-burn-info/>

November 1 and March 31.

DNR issues Large Scale Burn Permits for any burning of wooded debris that exceeds the size and/or complexity of the Small-Scale Burn Permit (up to 10 feet in diameter and greater than four feet high) including agricultural parcels, land clearing, logging operations, and contractor certification burning. DNR burn permits are required on all state, municipal, borough, city and private parcels not covered under local or federal laws. Burn permits are required during Alaska's fire season from April 1st through August 31st and at other times of the year as designated by the DNR Commissioner.

FLM agencies issue authorizations for land burning on their managed lands and coordinate with DEC.

The **Responsible Authority** is the individual who is primarily responsible for a controlled burn for resource management objectives (prescribed or controlled burn) and ensures the conditions of the permit are met. The Responsible Authority for land management agencies and corporations submits the finalized Prescribed Burn or Land Clearing application to DEC. This person may also collect, review, and distribute any required pre- and post-burn information to DEC. The Responsible Authority should be identified in the prescribed burn or land clearing burn approval application. The Responsible Authority is often the one who conducts public meetings and has the greatest ability to interact with the public and local authorities on prescribed burning activities in their area.

To obtain valid approval for a Controlled Burn for resource management objectives or land clearing from DEC prior to each permitted ignition, the Responsible Authority must submit a controlled burn approval application to DEC containing the elements listed in Section 2.5 of this document. The application must include a section on smoke management contingencies that discuss actions to be taken in the event of smoke intrusions. The controlled burn approval for resource management (prescribed burns) or land clearing burns received from DEC will contain conditions to be met by the Responsible Authority. Applications for controlled burns may be submitted using the forms on DEC's open burn website⁵ or electronically through DEC's Air Permittee Portal.

The Responsible Authority must call and notify the DEC by noon the business day prior to any planned burn (call the number listed in the Open Burn Approval Letter) or email: dec.AQ.airreports@alaska.gov.

The person calling must provide the following information:

1. Controlled Burn Approval number
2. Authorized Agency Name
3. Burn Location
4. Burn Date(s)
5. Contact Name During Burn
6. Contact Telephone Number
7. Description of how and when the Test Burn will be completed

⁵ <http://dec.alaska.gov/air/air-permit/open-burn-info/>

8. Estimated Duration of Active Firing (ignition) Phase (prescribed burning only)
9. Estimated Duration of the Smoldering Phase (prescribed burning only)
10. Description of Pre-Burn Public Notices
11. Consideration of weather forecast and air quality advisories in area of burn

DEC staff will verify the burn approval is current and send an email message with the eleven elements to the appropriate DEC compliance and air monitoring personnel.

The final responsibility for ensuring the conditions of the burn approval permit are met rests with the Responsible Authority. On the burn day, the Responsible Authority must check whether DEC has issued burn restrictions; this information is available on the DEC Air Quality Air Advisory website.

DNR issues Large Scale Burn Permits for the burning of wooded debris that exceeds the size and/or complexity of the Small-Scale Burn Permit (up to 10 feet in diameter and greater than four feet high) including agricultural parcels, land clearing, logging operations, and contractor certification burning. DNR burn permits are required on all state, municipal, borough, city and private parcels not covered under local or federal laws. Burn permits are required during Alaska's fire season from April 1st through August 31st and at other times of the year as designated by the DNR Commissioner. Large scale burn permits less than 40 acres are not coordinated with DEC; however, the permits include smoke management principles, coordination with DNR, and a requirement for minimizing impact to the public.

FLM agencies may issue authorizations for prescribed/controlled land burning on their managed lands and coordinate with DEC if the prescribed burns are 40 acres or more in a year.

The Responsible Authority should curtail burning if, in their opinion, they are not getting adequate smoke dispersion or if local weather factors are such that smoke problems could result. The Responsible Authority communicates any potential or existing smoke problems to the DEC Meteorologist at 907-269-7676 (primary), or at 907- 269-6249 (secondary), and handles local coordination, local problem-solving, and local communication within the area affected by smoke intrusions. The Responsible Authority may request monitoring assistance from DEC, if necessary. DEC will work with the Responsible Authority.

2.3 Smoke Management Components of Burn Plans

This section is designed to give guidance on preparing smoke management information to support controlled burns used for resource management and land clearing approval applications. Consideration of smoke management is a critical component of every controlled burn approval application. This is important for meeting public health, welfare, and Class I area visibility goals as well as coordinating smoke management that may affect other burning in the area. These goals are discussed further in this section.

Evaluating potential dispersion of smoke emissions from a project is the single most important component of an effective ESMP. Land managers and owners may use a variety of evaluation

methods for small projects that will not impact any sensitive features or where potential impacts are easily monitored and mitigated. For large projects, state-of-the-art tools exist to evaluate potential impacts.

DEC evaluates controlled burn applications for the potential of the project to contribute to unacceptable smoke or particulate level impacts on smoke sensitive features and populations. DEC is responsible for evaluating the cumulative impacts of multiple projects and authorizing only as many projects as the airshed can handle for public health. If during the controlled burn approval process several individual projects request ignition at close time intervals, attempts will be made to ensure the agencies and landowners involved coordinate ignition times to minimize smoke impact.

When scheduling a burn and ignition time, the Responsible Authority must consider existing air quality, meteorological, and environmental conditions to evaluate smoke dispersion. The potential effects of multiple burn days, multiple ignitions, and residual smoke must be evaluated prior to ignition.

Controlled burns (prescribed burns, agricultural and land clearing burns) will only be conducted when favorable dispersion conditions exist. The Responsible Authority should obtain wind forecasts from the National Weather Service (NWS) forecasters for wind speed and direction, an estimate of mixing heights, and expected residual smoke behavior for the night following the burn. The NWS forecast for smoke dispersion will generally integrate all pertinent weather information such as the timing of expected weather changes that may affect smoke dispersion. Prescribed burn approval conditions may require a pre-burn meteorological conference (METCON) between your fire weather team and DEC's meteorologist prior to ignition.

After ignition, if meteorological conditions change and smoke impacts sensitive features, technologically feasible and economically and environmentally reasonable actions must be taken to mitigate impacts.

2.4 Smoke Management Techniques

Below are some examples of smoke management techniques the Responsible Authority should consider to minimize emissions and smoke impacts:

- Use of ventilation factors, up-to-date weather data, and weather forecasts
- Appropriate modeling with accurate weather data and emission factors specific to the vegetation types
- Scheduling burns to use weather fronts that bring precipitation to assist with minimizing air quality impacts
- Burning when fuel moistures are low enough to prevent excessive smoldering
- Reference historic (e.g., over the last 10 years) emissions from burns in the area
- Emission projections based on sound data and science
- Identification of smoke sensitive features and receptors; burn when wind direction and

- dispersion will mitigate impacts to sensitive features⁶
- Visual observations
- Monitoring
- Test burns (small piles or representative areas)

2.5 Elements of a Controlled Burn Application

Prior to each planned burn that requires DEC's approval, the Responsible Authority will submit their controlled burn approval application (Appendix B) to DEC. Each controlled burn approval will expire on December 31st of the year it was issued.

Each agency or landowner may use the DEC application format or the online Permittee Portal⁷ to submit their burn approval application. The DNR, DOF also issues burn permits and has its own application form. The DOF burn permits are in addition to DEC burn approvals and address fire safety and other issues. Many of the following elements in the DEC Controlled Burn Application are also included in the DNR DOF application.

The following information is required for processing:

i. Indicate the location, duration, and inclusive dates considered for the planned burn.

Emission estimates are typically based on the EPA's AP-42 Handbook.

Provide a legal description or latitude and longitude of the location to be burned and the expected duration of both single events and the entire burning project. Minor changes or additional information for the burn plan can be discussed at the time DEC is notified by phone. At a minimum, the applicant is required to call DEC by noon at least one working day prior to ignition. Call the number listed in the Open Burn Approval Letter.

ii. Identify the location of all sensitive features that might be impacted by smoke.

The Responsible Authority should identify on a map all sensitive features, which include population centers such as communities, cities, towns, hospitals, health clinics, nursing homes, schools (in session), campgrounds, numbered Alaska highways and roads, airports, Prevention of Significant Deterioration (PSD) Class I areas, and any other areas where smoke and air pollutants can adversely affect public health, safety, and welfare.

iii. Indicate how the public will be informed prior to, during, and after the burn.

The best way to avoid complaints is to make sure everyone around the burn area knows

⁶ Sensitive features include but are not limited to population centers such as communities, cities, towns, hospitals, health clinics, nursing homes, schools (in session), campgrounds, numbered Alaska highways and roads, airports, Prevention of Significant Deterioration Class I Areas, and any other areas where smoke and air pollutants can adversely affect public health, safety, and welfare.

⁷ <http://dec.alaska.gov/Applications/Air/airtoolsweb/Home/Index>

when the burn will occur so they can take steps to avoid the smoke. The Responsible Authority's local contact phone number should be publicized so the public can contact you. The public must be notified at least three days prior to the anticipated burn through the local news media or the local Post Office.

iv. Indicate how coordination with other concerned agencies, including the Responsible Authorities of sensitive features, will be carried out.

Indicate how all concerned agencies will be notified prior to ignition, including authorities in control of sensitive features identified in item 2 (such as the FAA, State Troopers, military, fire department, adjacent land managers, etc.) who are potentially affected by impaired visibility or adverse smoke impacts. Include a list of telephone numbers or email addresses of agencies that must be contacted prior to ignition.

v. Indicate the source of the weather forecast and how it will be used to prevent smoke impacts.

Identify how the local and spot weather forecast will be obtained (e.g., through the NWS) prior to ignition of the controlled burn. Parameters that should be obtained are the predicted visibility, dispersion conditions, wind direction, and wind speed.

vi. Indicate how weather changes will be monitored and what will be done to reduce or mitigate smoke impacts if unfavorable weather should occur after ignition.

Indicate how the weather will be monitored throughout the controlled burn. Identify what actions will be taken if a wind shift or other weather change begins to create an adverse smoke impact on sensitive features identified in Item 2. For example, if an inversion is expected to occur during the night, active ignitions could be ceased.

If any safety hazard is present as a result of smoke, or if requested by the authority of a sensitive feature, all technologically feasible and economically and environmentally reasonable steps to mitigate smoke impacts must be taken.

vii. Indicate what will be done to validate predicted smoke dispersion.

Indicate how smoke dispersion will be predicted. If a recommended method (test fire, small piles or areas, etc.) fails to indicate that acceptable smoke dispersion will occur, no fires will be ignited.

viii. Indicate proposed techniques to be used to enhance the active fire phase and reduce the smoldering phase.

Consider employing emission reduction techniques (Appendix D) to enhance the active fire phase and reduce smoldering and indicate what is feasible to accomplish the burn objectives.

ix. Indicate how authorities in control of sensitive features will be contacted if visibility decreases.

Provide a contingency plan (Appendix E) for smoke intrusion into populated areas, Class I areas, or other smoke sensitive features as notified in item 2. Authorities having control over sensitive features identified in item 2 must be notified if visibility is expected to decrease to less than three miles for over an hour. Indicate how authorities of sensitive features will be notified if this occurs. If any safety hazard is present, or if requested by the authority of a sensitive feature, impacts must be mitigated through steps that are technologically feasible and economically and environmentally reasonable. Contingency or emergency monitoring may be needed to measure and detect smoke intrusions on sensitive features.

x. Identify alternative disposal options for material being controlled burned.

An evaluation of alternatives to controlled burning (Appendix F) must demonstrate that controlled burning is the only technologically feasible and economically and environmentally reasonable alternative. Identify other alternative disposal options for material burned (e.g., marketing timber with a lumber company), why burning is the selected alternative and why the alternatives were not used; or list any alternatives to burning that have been done to the burn units prior to ignition.

xi. Indicate how coordination with air quality authorities having jurisdiction will take place.

At a minimum, notify DEC by telephone by noon one business day prior to ignition. Call the number listed in the Open Burn Approval Letter. Include the 11 items in Section 2.2. If a multiple day burn is planned, the responsible authority need only call before the first ignition day. A call to DEC after a multiple day burn is completed is requested. If the burn is not conducted, please notify DEC within 24 hours to schedule a new burn date.

xii. Indicate the type of vegetation to be burned, pre-burn and post-burn fuel loading estimates, and ignition technique to be used

Pre-burn fuel loading represents the amount of fuel present at the burn location (to be consumed) and should be expressed as the weight of fuel per unit area in tons per acre. The post-burn loading estimate represents the fuel remaining after the burn. The ignition technique should describe the method (e.g., hand ignition, drip torch, Heli-torch) and technique (e.g., strip head fire, backing fire, etc.).

xiii. For prescribed fires, indicate whether the fire is needed for land management purposes.

The RH Rule allows the state to adjust its uniform rate of progress towards “natural visibility” and deduct wildfire and prescribed fire emissions (wildland prescribed fires) that were conducted with the objective to establish, restore, and/or maintain sustainable and resilient wildland ecosystems; to reduce the risk of catastrophic wildfires; and/or to preserve endangered or threatened species during which appropriate basic smoke

management practices were applied.⁸

xiv. Provide the approximate emissions expected for each burn and method used to estimate.

Approximate emissions can be estimated by multiplying the amount of fuel consumed (usually expressed in tons), by an emission factor expressed in pounds per ton of fuel. Emission factors can be found on EPA's website at:

<http://www.epa.gov/ttn/chief/ap42/ch13/>. Other emission modeling tools for fires may also be used. These include but are not limited to the following tools:

- Bluesky
- SMOKE (Sparse Matrix Operator Kerner Emissions) Modeling System
- Fuel and Fire Tool (FFT)
- Fire Emission Production Simulator (FEPS)
- First Order Fire Effects Model (FOFEM)

xv. Air monitoring during burning activities

Identify how the proposed burn project may affect or potentially impact air quality at smoke sensitive features, Class I areas (Section 3 and Appendix H), and designated and air quality nonattainment areas. DEC may require monitoring for certain burns. Such burns are typically large-scale or very close to sensitive features. The monitoring requirements, if any, will be addressed within the approval process. If monitoring is required, DEC may supply monitoring equipment and personnel.

Information and maps on nonattainment and maintenance areas can be viewed at <https://dec.alaska.gov/air/anpms/communities/>. DEC regulation 18 AAC 50.065(f) prohibits open burning between November 1 through March 31 in or near the Fairbanks PM_{2.5} nonattainment area or in the Juneau Wood Smoke Control Areas. Information on Air Quality Monitors can be DEC found at the DEC monitoring web page <https://dec.alaska.gov/air/air-monitoring/>.

If the burn will not adversely affect visibility in a Class I area, state that there is low potential of the burn impacting visibility in a Class I area and that monitoring will not be conducted.

Items one through eleven (i-xi) are required in an open burning application under existing DEC regulation (Appendix B); items twelve through fifteen(xii-xv) are elements that are necessary for managing smoke and developing and tracking emission inventories for regional haze.

2.6 Post-burn Reports

After each burn, the Responsible Authority will submit a post-burn report to DEC within 90

⁸ 51.308 (f)(vi) (B)

days. The Responsible Authority must maintain a copy of the application and post-burn report. A post-burn report must include the following information:

- **Authorized agency**, controlled fire or range name, and approval number.
- **Date of burn(s)** – Actual dates of the burn (ignition, active burning, and smoldering phases).
- **Burn location** – Latitude and longitude of center of burn area, along with map showing burned area.
- **Total Area of burn** – The entire burn unit less any unburned inclusions (Estimate in acres).

Address the following elements:

- **Fuel type(s)** – The fuel type optimally represents the predominant fuel or cover type consumed in the fire (e.g., Sitka spruce). Specify source of fuel information (e.g., CFDR, NFFL) and descriptive model.
- **Pre-burn fuel loading information** – Land managers who are unfamiliar with estimating pre-burn fuel loading should ask DEC to supply them with information, guidance documents, and models that are currently used to compile this information. Estimates of fuel loading are all that are necessary.
- **Fuel consumption** – The amount of fuel actually consumed expressed in tons/acre (pre-burn fuel loading data is acceptable if actual numbers cannot be determined).
- **Predominant configuration of the fuel burned**, e.g., pile, windrow, broadcast, or underburn.
- **Emission reduction techniques used** – Describe any techniques applied that reduced the actual amount of emissions, for example, changing ignition timing to allow for more efficient combustion.
- **Type of Burn** – Indicate whether the burn was performed for land management purposes.
- **Verification of weather forecasts and air quality advisory status** for the event date(s).
- **Description of public notifications made.**
- **List of complaints received** concerning excess odors or smoke (if any), including name, phone number of complainant, and any corrective action taken.

3 BURN RESTRICTIONS

3.1 Burn Restrictions – Air Quality

When DEC issues burning restrictions based on air quality concerns in any part of the state, all AWFCG members will be notified as soon as possible. If there is residual smoke in the area, it is the responsibility of the Responsible Authorities to contact DEC and check the DEC Air Advisory web site (<http://dec.alaska.gov/Applications/Air/airtoolsweb/Advisories>) prior to a scheduled burn to determine if a restriction is pending or in effect. Local government agencies and the DOF also need to be contacted to verify there are no open burning restrictions.

DEC Burn Restrictions can be issued as follows:

- Statewide
- By airshed(s)
- By proximity to smoke sensitive feature
- By DEC authority (18 AAC 50.245)
- Any combination of the above

Any restrictions will be based on local observations and available monitoring and meteorological data. Generally, restrictions due to poor air quality are in effect for 24 hours, although multiple day and weekend forecasts will be made. DEC encourages Responsible Authorities to restrict conducting prescribed burn projects on holiday weekends near sensitive areas or areas with high recreation use. The Responsible Authority should contact DEC if they wish to burn during holidays so that adequate contingencies are in place to manage any smoke intrusions.

The final responsibility for smoke management in the locality of the prescribed burn rests with the Responsible Authority who is conducting the burn activities. The Responsible Authorities are expected to mitigate smoke by choosing optimal times and weather conditions that meet the needs of the prescribed burn and also minimizes smoke intrusions if, in their opinion, they are not getting adequate smoke dispersion, or if local weather factors or topographical features are such that smoke problems could result. Conversely, if local weather conditions appear to be more favorable for burning than what was forecast, Responsible Authorities should contact DEC to discuss options.

Prescribed burn ignitions should not occur if:

- A DEC Air Quality Advisory is in place for areas that could be impacted by the burn;
- Air quality is deteriorating and is expected to continue to deteriorate;
- There is a high probability that a significant amount of smoke will intrude into "sensitive features";
- The burn will not comply with the Alaska SIP or the federal CAA regarding visibility protection of Class I federal areas (Appendix E);

- Any state or federal air quality standards, regulations, laws, or rules would be violated;
- Air quality is deteriorating and is expected to continue to deteriorate which may result in an Air Quality Episode (Appendix G) being declared in the next 24-hour period. Additional ignitions will be denied until conditions improve in the area.

3.2 Burn Restrictions - Fire Prevention

DNR DOF issues temporary suspensions or closures on permitted burning activities covered under small and large scale burn permits due to red flag warnings, high fire danger, weather events, or high wildland fire activity. This includes, but is not limited to, burn barrels and burning activities involving maintained lawns, brush piles, agricultural parcels, land clearing, and logging operations. Boroughs, municipalities, and areas that issue their own local permits may have different or additional burning restrictions that apply, and it is the landowners' responsibility to check with local agencies to determine what those may be.

The US Forest Service (USFS), Bureau of Land Management (BLM) and local fire departments will also issue closures on burning activities. While the primary purpose is fire prevention, they also serve to mitigate potential air quality issues related to fire.

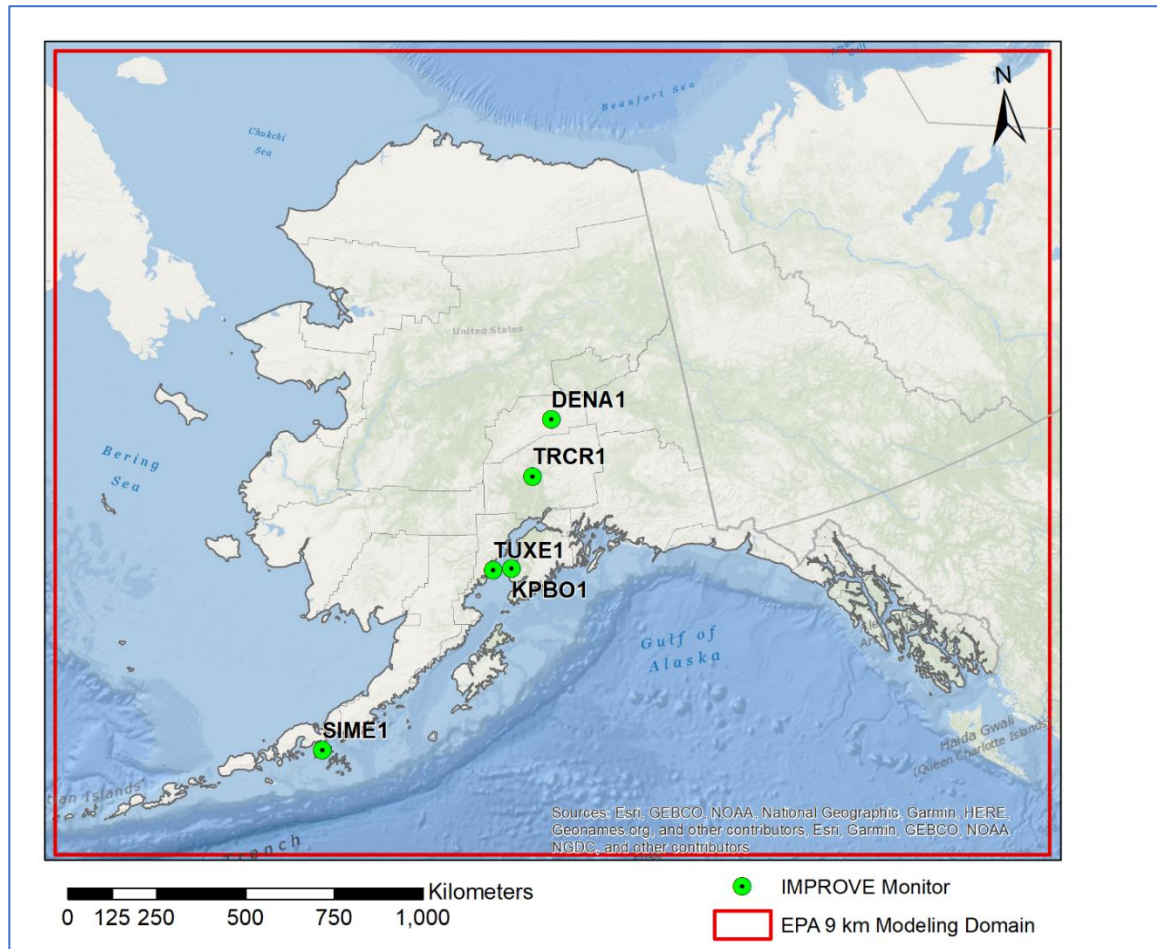
4 AIR QUALITY MONITORING

4.1 Visibility and Regional Haze Monitors

All states must develop programs to make “reasonable progress” toward meeting the visibility goals in designated Class I areas as part of their air quality SIPs. Alaska has four Class I areas: Denali National Park & Preserve, Tuxedni Wilderness Area, Simeonof Wilderness Area, and Bering Sea Wilderness Area (Figure 1 Class I Area Air Quality Monitors). The EPA has four monitors to track air quality for regional haze purposes. Denali Class I area has two monitors. One at the Denali Headquarters (DENA1) across the Park Road from park headquarters, approximately 250 yards from headquarters area buildings and the Trapper Creek location (TRCR1) which is located 100 yards east of the Trapper Creek Elementary School and a quarter mile south of Petersville Road.

The Tuxedni Wilderness monitor (TUXE1) was originally near on the west side of Cook Inlet, approximately 5 miles from the Tuxedni Wilderness Area. The site was operational as of December 18, 2001, but in 2014 the monitor moved to a new site roughly 3 miles south of the community of Ninilchik on the Kenai Peninsula (KPB1). The Simeonof Class I area monitor (SIME1) is in the community of Sand Point which is approximately 60 miles north west of the Simeonof Wilderness Area.

Figure 1 Class I Area Air Quality Monitors



4.2 Ambient Air Monitoring

“Ambient air monitoring” within the context of the ESMP refers to air quality monitoring conducted as a consequence of wildfire activity or in support of prescribed or agricultural fire activities. All monitoring of prescribed burns over 40 acres in size should be performed with DEC approved air monitoring samplers using standard operating procedures for monitor operation, data collection, and QA/QC. Samplers should be placed outside of the fire zone in a location that is representative of a smoke sensitive area, such as a hospital or health clinic.

Monitor site placement depends on the meteorology (primarily wind direction), area topography, and the relationship of the smoke and airshed to the populated area. Monitoring may require the deployment of several samplers. Example: a land management agency is planning a large prescribed burn, and the closest community is fifteen miles away. Weather forecasts indicate that the winds could blow toward the town; therefore, a monitor should be placed in or near the community.

Public health protection is the focus of all monitoring site placement. Responsible Authorities may request assistance from the DEC Monitoring and Quality Assurance Program to identify appropriate monitoring sites. Time and materials fee or a reimbursement agreement with DEC

may be necessary.

DNR also monitors large scale permitted open burns. In most cases, the operator is required to check with DNR for weather conditions and on large projects, DNR communicates with DEC for weather conditions.

4.3 Smoke Monitoring Policy

DEC is willing to work with land managers or landowners to assess smoke impacts and protect public health through ambient air monitoring assistance. While DEC does not have funding to support prescribed fire activity, the air monitoring section does have trained staff who could be mobilized to support a fire event by evaluating smoke impacts or monitoring air quality for prescribed burns. Funding agreements will be necessary for DEC to support monitoring.

With newer and more portable real-time monitors, the ability to monitor smoke impacts has become easier and more accurate.

5 AIR QUALITY COMPLAINT PROCEDURES

5.1 General Procedures

There may be occasional intrusions of smoke into areas with communities or protected airsheds. The Responsible Authority and DEC are responsible for complaint processing and smoke-intrusion reporting for air quality concerns. Other agencies are responsible for complaint procedures for fire prevention and response. Documentation of such occurrences will improve future prevention measures and properly inform responsible officials and the public.

The nature of the complaint will determine what procedure is to be followed to address the complainant and which agency is responsible for investigation. Every attempt should be made to resolve the complaint at the lowest possible level. Any agency or landowner receiving complaints should handle the initial situation if they are knowledgeable of the ESMP or the specific burn and should learn as much information about the burn as possible in order for proper follow-up actions.

Complaints can come in several forms. Historically, complaints have been received from the public at large where the basis for the complaint is an objection to seeing smoke, smelling smoke, and health concerns because of smoke. Local explanation of the program and resolution of the complainant's concerns will often solve the problem. If an AWFCG member receives a complaint for open burning or a prescribed burn, they should explain the purpose and basis for the ESMP in order to inform the caller that a control program is in place in Alaska. If a complaint is received for garbage burning or an unauthorized burning activity, the ESMP is not the guiding document.

The following information needs to be collected in order for the organization or landowner to take proper and necessary follow up actions. Information to be collected includes:

- Name and contact information of the complainant
- Description of the complaint
- Location of the burn (include best estimate of burn location and direction of smoke)
- Time of day
- Any other comments that will aid in the follow up process (e.g., people see or smell smoke, etc.)

The Responsible Authority should forward any complaints received to DEC with their post-burn report or when requested by DEC. If another AWFCG member receives a smoke complaint, it will be forwarded to the appropriate agency representative (usually the Responsible Authority or DEC) as soon as possible. If a smoke complaint on a land clearing burn is received by an AWFCG member, the complaint will be forwarded to DEC as soon as possible. DEC will immediately forward complaints it receives to the Responsible Authority for resolution if the complaint information suggests a prescribed burn is conducted during a restricted period or if smoke dispersion is less than adequate for the burn.

DEC will log all complaints received into the DEC Complaint Automated Tracking System (CATS) via AirTools, the DEC Air Quality database. For each complaint received by the Responsible Authority and DEC, pertinent data will be recorded along with the final resolution or actions taken to address the complaint. This information may be valuable for contacting community residents prior to future planned burns.

5.2 Public Notification and Exposure Reduction

The cooperating agencies and landowners will agree on trigger levels, communication strategies, and contingency measures before the burn project is ignited.

If smoke impacts develop from a prescribed burn and it becomes necessary to issue air quality notices (e.g., advisories, alerts, warnings, or emergencies), DEC and the Responsible Authority will cooperatively determine a course of action. The Responsible Authority should consult with DEC regarding appropriate short-term fire management response to abate verified impacts to smoke sensitive areas. Management responses should be implemented that will mitigate adverse impacts to public health using technologically feasible and environmentally and economically reasonable actions.

According to 18 AAC 50.245, DEC may, at its discretion, declare an air episode or advisory (Appendix G) and prescribe and publicize curtailment actions when the concentration of PM_{2.5} in the ambient air has reached the levels described in the table below. Advisories are based on current and expected smoke impacts, meteorological conditions, and qualitative assessment by trained staff. Advisories may be issued without monitoring data. Episodes are called at specific levels of air pollution and have associated regulatory requirements. Currently, the PM_{2.5}-episode requirements limit the opacity of emissions from woodstoves.

DEC uses the levels in the chart below to announce air quality advisories and episodes. The National Ambient Air Quality Standards (NAAQS) for PM_{2.5} are 35µg/m³ for the 24-hour average and 12 µg/m³ for the annual average. DEC will follow the AQI levels and will call air quality advisories when levels reach the AQI category of ‘Unhealthy for Sensitive Groups,’ i.e.,

when levels exceed or are expected to exceed the NAAQS for PM_{2.5}.

Episode Levels for PM_{2.5}					
AQI Level	AQI Value	Hr PM_{2.5} (µg/m³)	Episode Levels	Cautionary Statements	Descriptive Statements
Good	0-50	0-12.0		None	None
Moderate	51-100	12.1-35.4		None	None
Unhealthy for sensitive groups	101-150	35.5-55.4		People with respiratory or heart disease, the elderly and children should limit prolonged exertion	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	151-200	55.5-150.4		People with respiratory or heart disease, the elderly and children should limit prolonged exertion; everyone else should limit prolonged exertion.	Everyone may begin to experience some adverse health effects, and members of the sensitive groups may experience more serious effects.
Very Unhealthy	201-300	150.5-250.4	Alert	People with respiratory or heart disease, the elderly and children should avoid prolonged exertion; everyone else should limit prolonged exertion	Health Alert: Everyone may experience more serious health effects.
Hazardous 1	301-400	250.5-350.4	Warning	Everyone should avoid any outdoor exertion.	Health warnings of emergency conditions
Hazardous 2	401-500	350.5-500	Emergency	People with respiratory or heart disease, the elderly and children should remain indoors.	The entire population is more likely to be affected.

When DEC declares an advisory they will publicize actions individuals can take to protect public health and may request voluntary emission restrictions from any permitted activity that might impact the area subject to the advisory (18 AAC 50.245). Air quality advisories (Appendix G) include broad educational statements that advise people about the potential for smoke impacts in the area, recommend actions for persons with respiratory illnesses or heart disease, and suggest ways to limit exposure. Advisories may also include restrictions on open burning (18 AAC 50.065(e)). Advisories are posted on DEC's advisory website.⁹

PM_{2.5} alert, warning, and emergency episode levels each have 24-hour average particulate concentration levels and have action statements that suggest ways that the general public and sensitive individuals can limit their exposure. These notices are based on real-time ambient monitoring, in combination with weather forecasts. Alerts will not be issued based solely on visual estimations of smoke impacts nor on suspected smoke impacts.

If smoke intrusions cause unacceptable area-wide impacts, including nuisance smoke, DEC will deny the ignition of new controlled burns that could impact the area and announce air quality advisories. Air quality advisories are typically appropriate for situations where the potential for multiple-day smoke impacts exists.

⁹ <http://dec.alaska.gov/Applications/Air/airtoolsweb/Advisories>

6 PUBLIC EDUCATION

Public education and outreach prior to burn ignition greatly decreases public complaints and often significantly decreases potential public health impacts attributed to smoke intrusion. Every effort should be made by the Responsible Authority to involve the potentially affected community in an early and on-going discourse on the use of prescribed fires in their area.

Public outreach often helps avoid conflicts which might not otherwise be identified, such as igniting burns during scheduled athletic events or during annual hunting/fishing opening dates, holidays, or other special events.

Agencies will work together with partners and other affected groups and individuals to prevent unauthorized ignition of wildfires. Public education guidance should be cooperatively developed and/or distributed by the AWFCG for use by Responsible Authorities. Such guidance would discuss options available for adequate public education, including public meetings, public service announcements, news articles, and public comment periods. The FireWise campaign¹⁰ and the FireWise Alaska handbook¹¹ have been successful public education platforms and could easily be used as a pattern or as a vehicle to promote public education on prescribed burning objectives at a local or airshed level where appropriate.

Other Public Education Suggestions:

- Seek out appropriate forums to review written information about rules and regulations, and answers to your questions.
- Initiate contacts with local news media or community websites to generate feature stories about the prescribed fire program and burn regulations.
- Include appropriate information about prescribed and land clearing burns in displays used at public gatherings, such as fairs.
- Provide press releases and public service announcements when needed.
- Coordinate with other agencies' public affairs offices to combine information about burning when appropriate.
- Develop brochures and other printed materials for distribution to appropriate sources and recipients or use regulatory agency brochures if applicable.

There are many useful federal, state and local websites applicable to land clearing and prescribed burning activities.

¹⁰ <http://www.firewise.org/>

¹¹ <http://forestry.alaska.gov/Assets/pdfs/home/firewise09.pdf>

7 FEES AND PROGRAM FUNDING

Fees for a Controlled Burn for Resource Management and Controlled Burn for Land Clearing approvals are posted in Alaska Administrative Code 18 AAC 50.400(l). Open burning regulations are located at 18 AAC 50.065. For prescribed burning less than 40 acres, review the DNR DOF Large Scale Burn Permits.

8 ENFORCEMENT

Regulations currently exist that prohibit burning in a manner that adversely impacts public health or the environment (18 AAC 50.065, 50.110, and 50.245). Adherence to State of Alaska regulations is mandatory. It is the responsibility of DEC to enforce the regulations. Additional regulations may be promulgated if the State determines that present regulations are inadequate for protecting public health.

DNR DOF regulations are focused on fire prevention, and their enforcement authority lies in statute (AS. 41.15.950)¹². Other agencies also have fire restrictions or issue permits. These restrictions are compiled online at <https://dec.alaska.gov/air/anpms/alaska-fire-restrictions/> and in the AWFCG Master Agreement Operating Plan Section IV.6. Public Use Restrictions. During the fire season, DNR, DEC, and regional/municipal fire authorities coordinate investigations and enforcement as applicable and as much as possible.

Agencies will work together with partners and other affected groups and individuals to pursue investigation of human caused wildfires to understand cause and remedies. Unacceptable smoke impacts that occur because the Responsible Authority was negligent or failed to follow the open burning regulations may result in enforcement action. Should an agency or landowner fail to follow procedures, requirements, or restrictions issued under the open burning regulation, it may be considered grounds for revocation of the burn permit.

A mechanism similar to the program used to enforce air quality regulations for industrial sources is used to enforce wildland burning regulations or agreements. Such a program provides:

- A process for notifying land managers of the unacceptable impacts.
- An opportunity for the land managers to respond to allegations of unacceptable impacts.
- The ability for DEC to take regulatory action, including cooperative agreements, which may require ESMP revisions.
- An appeal process.

In addition, the ESMP program will be reevaluated if a Responsible Authority follows ESMP guidelines but resultant smoke still violates the NAAQS or produces significant complaints.

9 PROGRAM EVALUATION

¹²

<http://forestry.alaska.gov/Assets/pdfs/burn/2019/statutes%20&%20regs%20combined%20for%20burn%20webpages.pdf>

A periodic review by interested stakeholders of the ESMP effectiveness should take place on a yearly basis or as necessary. Preferably, this would take place in the fall after all prescribed burning activities are complete. The program evaluation should include a review of the ESMP effectiveness and should include consideration of the role of prescribed fire in meeting the goals in a multi-year or resource management plan. The objections should include whether the program establishes, restores, and/or maintains a sustainable and resilient wildland ecosystem and/or preserves endangered or threatened species.

Effectiveness reviews should also consider air quality impacts as well as a review of any received post-burn reports, which may describe implemented contingency plans due to smoke impacts or use of ESMP recommendations. participants in the review process (e.g., original program developers to include landowners/managers, air quality managers, the public, etc.) or at a minimum, agency participants in the AWFCG.

The program evaluation should review the program objectives over the review period (e.g., acres burned, anticipated/desired future acres burned, needed modifications).

10 LIST OF ACRONYMS, ABBREVIATIONS, and DEFINITIONS

10.1 Acronyms

($\mu\text{g}/\text{m}^3$)	micrograms per cubic meter
AAC	Alaska Administrative Code
AQ	Air quality
AICC	Alaska Interagency Coordination Center
AWFCG	Alaska Wildland Fire Coordinating Group
CAA	Clean Air Act
CFR	Code of Federal Regulations
DEC	Alaska Department of Environmental Conservation
ESMP	Enhanced Smoke Management Plan
NAAQS	National Ambient Air Quality Standards
($\mu\text{g}/\text{m}^3$)	micrograms per cubic meter
PM	Particulate matter
SIP	State Implementation Plan
WESTAR	Western States Air Resources Council
WRAP	Western Regional Air Partnership

10.2 Definitions

Agricultural Burn – also known as *Controlled Burning for Land Clearing* – open burning of woody debris material by farmers and developers. Approval is required from DEC if the intent is to clear and burn 40 acres or more per year.

Airshed is a geographical area where atmospheric characteristics are similar (e.g. mixing height and transport winds).

Air Quality Advisory refers to a period where an air episode may warrant public notification. Air quality advisories are general, educational-type statements which advise the general public about the potential for smoke impacts and suggest ways to limit exposure. “Advisory” status does not involve any required action on the part of the public or the burn agency and often does not have monitoring data associated with it, though it may refer to weather forecasts.

Air Quality Alert, Warning, or Emergency status refers to a period where an air episode is declared, as stated in 18 AAC 50.245. Valid air quality monitoring data and weather forecasts should be used to document air quality status and duration. Regardless of the source of the emissions, air episodes involve required actions on the part of the public (such as avoiding outdoor exercise) or land managers (such as avoiding additional emissions for the area).

Alternatives (or “burning alternatives”) refer to mechanical, biological, or chemical treatment methods of fuel reduction that do not include burning, such as chipping, grinding, logging, mechanical/hand thinning with removal, etc.

Ambient air is that portion of the atmosphere, external to buildings, to which the general public has access.

Ambient air monitoring in this document refers to air quality monitoring done in support of prescribed fire activities or in response to wildland fire activities.

Anthropogenic emissions are produced by human activities.

Approval or controlled burn approval (or “permit”) refers to the DEC written approval that is required if material from land clearing operations for prescribed fire for agricultural, development, hazard fuel reduction, and forest or habitat management if the area burned, or the material collected to be burned, is 40 acres or greater per year. (18 AAC 50.065(g))

Emission Factor - AP-42 Handbook is the EPA’s Compilation of Air Pollutant Emission Factors for stationary point, area, and mobile sources. An emission factor is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. Emission factors are then used to estimate the magnitude of a source’s pollutant emissions.

Burn plan is a strategic plan for managing a specific fire project to meet specific resource management objects. The plan includes the project objective, fire prescription (including smoke management components), personnel, organization, equipment, etc. It is used to apply for a DEC Controlled Burn Approval.

Burn restriction (see “Restriction”).

Class I area refers to an area set aside under the Clean Air Act (CAA) Section 162 to receive the most stringent protection from air quality degradation. This classification protects air quality in international parks, national parks greater than 6,000 acres in size, and national wildernesses greater than 5,000 acres in size, that were in existence on August 7, 1977, and any additions to those areas.

Clean Air Act (CAA) means 42 U.S.C. 7401 – 7671q, as amended through November 15, 1990. (18 AAC 50.990(17)).

Controlled Burn Approval application is the permit application required by DEC as part of the controlled burn approval process.

Controlled Burning for Land Clearing – see “Agricultural Burn”

Emission factors – are units are stated as “pounds of emission produced per ton of fuel consumed.” An emission factor is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. Emission factors are not yet available for accurately predicting emissions from burns in fuels such as Sitka spruce forests, tundra or deep duff layers commonly found in Alaska. Efforts are being made by the USDA Forest Service, Pacific Northwest Experiment Station to conduct research that will lead to more accurate estimations of emissions factors for Alaska. Emission factors are typically based on the EPA’s AP-42 Handbook.

Enhanced Smoke Management Plan (ESMP) is the agreement and program plan developed and agreed upon by the AWFCG. The purposes of ESMPs are to mitigate the nuisance and public health/safety hazards (e.g., on roadways and at airports and at smoke sensitive features) posed by smoke intrusions into populated areas; to prevent deterioration of air quality and NAAQS violations; and to address visibility impacts in mandatory Class I areas in accordance with the regional haze rules.

Fuel includes combustible vegetative matter such as grass, tundra, trees, shrubs, limbs, duff, and stumps.

Fuel loading is 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.

Fuel type is an identifiable association of fuel elements of distinctive species, form, size, arrangement, or other characteristics that will cause a predictable rate of spread or resistance to control under specified weather conditions.

Inversion refers to a layer of air in which the temperature increases with height. The effect of various types of inversions is to greatly retard the dispersal of smoke.

Land manager/owner is the responsible Line Officer for the Federal agencies or designated

individual in Federal, State, and private organizations who is authorized to make decisions concerning the management of specified land areas.

Member representative (or **Representative member** or **AQ Member**) means the individual who represents his or her organizational entity (agency or company) and is responsible for collecting and submitting pertinent agency burn information to the DEC Coordinator and AWFCG from their representative agency or company. They attend the annual meetings of the AWFCG.

Mixing height is measured from the surface upward, and it is the height to which relatively vigorous mixing occurs in the atmosphere due to turbulence and diffusion.

National Ambient Air Quality Standards (NAAQS) are the standards established by the EPA 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, materials damage, etc.) in the ambient air.

Natural background condition is an estimate of the visibility conditions at each Federal Class I area that would exist in the absence of human-caused impairment.

Non-attainment areas are areas that exceed the National Ambient Air Quality Standards (NAAQS) for certain "criteria pollutants" established by EPA or the states. Criteria pollutants have specific standards and exist for ozone, carbon monoxide, oxides of sulfur, oxides of nitrogen, lead, and particulate matter.

Nuisance smoke is the amount of smoke in the ambient air at concentrations below the NAAQS which interfere with a right or privilege common to members of the public, including the use or enjoyment of public or private resources. Nuisance smoke is regulated by Alaska regulation 18 AAC 50.110, "Air Pollution Prohibited: A person may not cause or permit any emission that is injurious to human health or welfare, animal or plant life, or property, or that would unreasonably interfere with the enjoyment of life or property."

Open burning means the burning of a material that results in the products of combustion being emitted directly into the ambient air without passing through a contaminant outlet. (18 AAC 50.990(65)) Open burning includes prescribed fire (Controlled Burning for Resource Management) and Controlled Burning for Land Clearing (agricultural burning). The terms are used interchangeably in this document.

Particulate matter (PM) refers to any airborne material, except uncombined water, which exists as a solid or liquid at standard conditions (e.g., dust, smoke, mist, fumes, or smog).

PM₁₀ refers to particles with an aerodynamic diameter less than or equal to 10 micrometers. Emissions of PM₁₀ are significant from fugitive dust, power plants, commercial boilers, metallurgical industries, mineral industries, forest and residential fires, and motor vehicles.

PM_{2.5} refers to particles with an aerodynamic diameter less than or equal to 2.5 micrometers. A measure of fine particles of particulate matter that comes from fuel combustion, agricultural

burning, woodstoves, etc.

Prescribed fire means “any fire intentionally ignited by management actions in accordance with applicable laws, policies, and regulations to meet specific land or resource management objectives. (40 CFR 50.1(m))

Prescription is a written statement defining the objectives to be attained and may include, but is not limited to, temperature, humidity, wind direction, wind speed, fuel moisture, soil moisture, and fire behavior characteristics under which a fire will be allowed to burn. A prescription is generally expressed as acceptable ranges of the prescription elements. The extent of the geographic area to be burned may also be a prescriptive element.

Regional haze is defined in 40 CFR 51.301 and generally refers to concentrations of fine particles in the atmosphere extending up to hundreds of miles across a region and promoting noticeably hazy conditions, wide-spread visibility impairment, especially in mandatory Class I areas where visibility is an important value.

Responsible Authority (Burn Boss, Fire Management Officer, land manager, etc.) is the individual who collects, reviews, and disseminates pre- and post- burn information to the DEC staff in the form of the Burn Application and Post-burn Report. This person is tasked with the responsibility of ensuring compliance with the approved burn permit, daily operations, coordinating burn information, providing smoke forecasting and air quality restrictions for their burns. This person(s) may also facilitate local area meetings to evaluate program effectiveness and solve local issues related to their agency’s burn plans. The Responsible Authority often has line authority and is the primary person with whom DEC will interact prior to, during, and after a burn. The Responsible Authority should be identified in the Burn Application that is submitted to DEC.

Restriction to burning occurs when an air quality episode is declared which covers the area of concern. Restrictions to burning are generally issued for a twenty four-hour period but may be for a longer period. The alert may be based on an assessment that inadequate air ventilation is available which would inhibit the dispersal of pollutants, such as inversions and low wind speeds.

Regardless of the source of the emissions, public notifications will be issued when smoke is impacting the area. Persons with controlled burn approvals must curtail their fire if their portion of the airshed is becoming overloaded or local weather factors would create smoke problems, even though no other restrictions have been imposed, i.e. wind moving directly into sensitive areas, inversions, etc.

Smoke dispersion refers to the processes within the atmosphere which mix and transport smoke away from the source. This depends on three atmospheric characteristics: atmospheric stability, mixing height, and transport winds.

Smoke intrusion refers to smoke from a prescribed fire entering a designated area at unacceptable levels.

Smoke sensitive features are population centers, such as towns and villages, camp grounds and trails, hospitals, health clinics, nursing homes, schools (in session), numbered Alaska highways and roads, airports, Federal Class I areas, etc., where smoke and air pollutants can adversely affect public health, safety, and welfare.

Smolder means to burn and smoke without flame. (18 AAC 50.990(99))

State Implementation Plan (SIP) is a CAA Section 110 required document in which states adopt emission reduction measures necessary to attain and maintain NAAQS and meet other requirements of the CAA (such as regional haze).

Transport winds is a term that refers to the wind speed and direction at the final height of smoke plume rise.

Violation of the PM NAAQS refers to 40 CFR Part 50, last revised in 2006. The daily PM₁₀ standard is violated when the 24-hour concentrations exceeds 150 µg/m³ at any monitor within an area more than one time per year. The annual PM₁₀ standard has been revoked.

The NAAQS levels for PM_{2.5} are set at a daily concentration less than or equal to 35 µg/m³ and an annual mean concentration of less than or equal to 15 µg/m³. The daily standard is violated when the 98th percentile of the distribution of the 24-hour concentrations for a period of one year (averaged over three calendar years) exceeds 35 µg/m³ at any monitor within an area. The annual standard is violated when the annual arithmetic mean of the 24-hour concentrations from a network of one or more population-oriented monitors (averaged over three calendar years) exceeds 12 µg/m³. Compliance with the annual PM_{2.5} NAAQS is based on population-oriented monitors because the health information, upon which the standard is based, relates area-wide health statistics to area-wide air quality as measured by one or more monitors.

Visibility Protection refers to Section 169A of the CAA which establishes a national visibility goal to "... prevent any future, and remedy any existing, impairment of visibility in mandatory Class I areas." Alaska has four federal Class I areas that are national parks or wilderness areas (Appendix G).

Western Regional Air Partnership (WRAP) is a voluntary organization comprised of western governors, 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.

Western States Air Resources Council (WESTAR) is an organization which consists of fifteen states including Alaska. WESTAR was formed to promote the exchange of information between the States, serve as a forum for western regional air quality issues of common concern and share resources for the common benefit of the member states.

Wildfire means any fire started by an unplanned ignition caused by lightning; volcanoes; other acts of nature; unauthorized activity; or accidental, human-caused actions, or a prescribed fire that has developed into a wildfire. A wildfire that predominantly occurs on wildland is a natural event.

Wildland means an area in which human activity and development is essentially non-existent, except for roads, railroads, power lines, and similar transportation facilities. Structures, if any, are widely scattered. The 2016 Exceptional Events Rule, and the 2017 Regional Haze regulation update clarifies that ‘wildland’ includes lands that are predominantly wildland, such as land in the wildland urban interface.


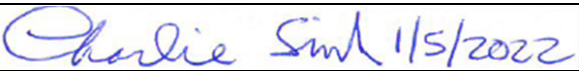


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2. NWCG Smoke Management Guide for Prescribed Fire, PMS 420-3, November 2020.
3. AWFCG Master Agreement Operating Plan Section IV.6. Public Use Restrictions.
4. NWCG Interagency Prescribed Fire Planning and Implementation Procedures Guide, PMS 484 July 2017
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6. 2016 Alaska Interagency Wildland Fire Management Plan (March 2020 Review)
7. National Wildfire Coordinating Group. 1996. Glossary of Wildland fire terminology. PMS 205. Boise, ID: National Wildfire Coordinating Group, National Interagency Fire Center. 162 p.
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11 SIGNATURE PAGE

Alaska Enhanced Smoke Management Plan Approval

The Alaska Wildland Fire Coordinating Group approved this version of the Alaska Enhanced Smoke Management Plan on December 1, 2021.

Agency Representative	Signature
Bureau of Indian Affairs, US Department of the Interior Tom St. Clair	THOMAS ST CLAIR Digitally signed by THOMAS ST CLAIR Date: 2021.12.01 11:15:31 -09'00'
Bureau of Indian Affairs, US Department of the Interior Tom St. Clair	
Bureau of Land Management, Alaska Fire Service Kent Slaughter	KENT SLAUGHTER Digitally signed by KENT SLAUGHTER Date: 2021.12.01 11:26:44 -09'00'
Alaska Dept. of Natural Resources, Division of Forestry Tim Dabney	Timothy A. Dabney Digitally signed by Timothy A. Dabney Date: 2021.12.01 14:15:36 -09'00'
US Department of the Interior, US Fish & Wildlife Service Robert Narus	ROBERT NARUS Digitally signed by ROBERT NARUS Date: 2021.12.03 12:22:57 -09'00'
Tanana Chiefs Conference Clinton Northway	Clinton Northway Digitally signed by Clinton Northway DN: cn=Clinton Northway, o=Tanana Chiefs Conference, ou=Fire, email=clinton.northway@tanachiefs.org, c=US Date: 2021.12.09 11:29:47 -09'00'
US Department of the Interior, National Park Service Alaska Regional Office Chuck Russell	CHARLES RUSSELL Digitally signed by CHARLES RUSSELL Date: 2021.12.08 09:00:40 -09'00'
US Forest Service, Region 10 Bobette Rowe	BOBETTE ROWE Digitally signed by BOBETTE ROWE Date: 2021.12.08 06:28:44 -09'00'
Alaska Dept. of Fish & Game, Division of Wildlife Conservation Sue Rodman	
Chugachmiut Charlie Sink	
Alaska Dept. of Environmental Conservation, Air Quality Molly Birnbaum	 1/6/2022 Alice Edwards, Air Quality Division Director
Assoc. of Village Council Presidents Vivian Korthuis, CEO	 Vivian Korthuis (Dec 10, 2021 16:01 AKST)

APPENDICES

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Appendix A

Alaska Wildfire Coordinating Group (AWFCG) =Membership List

**Alaska Wildland Fire Coordinating Group Membership
Agency Representatives, December 1, 2021**

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Appendix B

DEC Open Burning Policy and Guidelines

POLICY AND GUIDELINES

The State of Alaska has two basic concerns with open burning: 1) that it does not spread and become a wildfire, and 2) that it does not cause air pollution that creates a health hazard or a public nuisance. The Department of Natural Resources (DNR) is responsible for regulations and permits to address the first concern (fire safety). The Department of Environmental Conservation (DEC) is responsible for regulations and permits to address the second concern (environmental protection).

It is the policy of the DEC to eliminate, minimize, or control open burning and to encourage other methods of disposal where possible. When open burning is permitted by the DEC, the permittee must provide for the most efficient combustion possible for the material to be burned. The DEC supports the maximum recycling and utilization of wood and forest products to reduce the volume of material requiring burning.

All open burning in the state, whether requiring written approval from DEC or not, must be done in a way that maintains maximum combustion efficiency throughout the burning period.

The Enhanced Smoke Management Plan (ESMP) establishes the procedures for resource management and land clearing burns in the state and is a part of the state's Regional Haze State Implementation Plan.

18 AAC 50.110. AIR POLLUTION PROHIBITED.

18 AAC 50.110. Air pollution prohibited. No person may permit any emission which is injurious to human health or welfare, animal or plant life, or property, or which would unreasonably interfere with the enjoyment of life or property. (Eff. 5/26/72, Register 42)

Authority: AS 46.03.020 AS 46.03.710

18 AAC 50.065. OPEN BURNING

18 AAC 50.065. Open burning. (a) General Requirements. Except when conducting open burning under (g), (h), or (i) of this section, a person conducting open burning shall comply with the limitations of (b) - (f) of this section and shall ensure that

- (1) the material is kept as dry as possible through the use of a cover or dry storage;
- (2) before igniting the burn, noncombustibles are separated to the greatest extent practicable;
- (3) natural or artificially induced draft is present;
- (4) to the greatest extent practicable, combustibles are separated from grass or peat layer; and
- (5) combustibles are not allowed to smolder.

(b) **Black Smoke Prohibited.** Except for firefighter training conducted under (h) or (i) of this section, open burning of asphalts, rubber products, plastics, tars, oils, oily wastes, contaminated oil cleanup materials, or other materials in a way that gives off black smoke is prohibited without written department approval. Department approval of open burning as an oil spill response countermeasure is subject to the department's *In Situ Burning Guidelines for Alaska*, adopted by reference in 18 AAC 50.035. Open burning approved under this subsection is subject to the following limitations:

(1) open burning of liquid hydrocarbons produced during oil or gas well flow tests may occur only when there are no practical means available to recycle, reuse, or dispose of the fluids in a more environmentally acceptable manner;

(2) the person who conducts open burning shall establish reasonable procedures to minimize adverse environmental effects and limit the amount of smoke generated; and

(3) the department will, in its discretion, as a condition of approval issued under this subsection, require public notice as described in (j) of this section.

(c) **Toxic and Acid Gases and Particulate Matter Prohibited.** Open burning or incineration of pesticides, halogenated organic compounds, cyanic compounds, or polyurethane products in a way that gives off toxic or acidic gases or particulate matter is prohibited.

(d) **Adverse Effects Prohibited.** Open burning of putrescible garbage, animal carcasses, or petroleum-based materials, including materials contaminated with petroleum or petroleum derivatives, is prohibited if it causes odor or black smoke that has an adverse effect on nearby persons or property.

(e) **Air Quality Advisory.** Open burning is prohibited in an area if the department declares an air quality advisory under 18 AAC 50.245 or 18 AAC 50.246, stating that burning is not permitted in that area for that day. This advisory will be based on a determination that there is or is likely to be inadequate air ventilation to maintain the standards set by 18 AAC 50.010. The department will make reasonable efforts to ensure that the advisory is broadcast on local radio or television.

(f) **Wood Smoke Control and PM-2.5 Nonattainment Areas.** Open burning is prohibited between November 1 and March 31 in each wood smoke control area identified in 18 AAC 50.025(b) and in each PM-2.5 nonattainment area identified in 18 AAC 50.015(b)(3). In a PM-2.5 nonattainment area, a local air quality open burn permit program may replace the seasonal open burning prohibition in this section if the program

(1) does not cause or contribute to violations of the PM-2.5 ambient air quality standards set out in 18 AAC 50.010; and

(2) is part of a local air quality plan included in the *State Air Quality Control Plan*, adopted by reference in 18 AAC 50.030.

(g) **Controlled Burning.** Controlled burning to manage forest land, vegetative cover, fisheries, or wildlife habitat, other than burning to combat a natural wildfire, requires written department approval if the area to be burned exceeds 40 acres yearly. The department will, in its discretion, require public notice as described in (j) of this section.

(h) **Firefighter Training: Structures.** A fire service may open burn structures for firefighter training without ensuring maximum combustion efficiency under the following circumstances:

(1) before igniting the structure, the fire service shall

(A) obtain department approval for the location of the proposed firefighter training; approval will be based on whether the proposed open burning is likely to adversely affect public health in the neighborhood of the structure;

(B) visually identify materials in the structure that might contain asbestos, test those materials for asbestos, and remove all materials that contain asbestos;

(C) ensure that the structure does not contain

(i) putrescible garbage;

(ii) electrical batteries;

(iii) stored chemicals such as fertilizers, pesticides, paints, glues, sealers, tars, solvents, household cleaners, or photographic reagents;

(iv) stored linoleum, plastics, rubber, tires, or insulated wire;

(v) hazardous waste;

(vi) lead piping;

(vii) plastic piping with an outside diameter of four inches or more; or

(viii) urethane or another plastic foam insulation;

(D) provide public notice consistent with (j) of this section; and

(E) ensure that a fire-service representative is on-site before igniting the structure;

(2) the fire service shall ignite and conduct training on only one main structure and any number of associated smaller structures at a time; examples of associated smaller structures are garages, sheds, and other outbuildings; and

(3) the fire service shall respond to complaints in accordance with (k) of this section.

(i) **Firefighter Training: Fuel Burning.** Unless a greater quantity is approved by the department, a fire service may open burn up to 250 gallons of uncontaminated fuel daily and up to 600 gallons yearly for firefighter training without ensuring maximum combustion efficiency. To conduct this training without prior written department approval, the fire service shall

(1) provide public notice consistent with (j) of this section before burning more than 20 gallons of uncontaminated fuel, unless waived in writing by the department; and

(2) respond to complaints in accordance with (k) of this section.

(j) **Public Notice.** A person required to provide public notice of open burning shall issue the notice through local news media or by other appropriate means if the area of the open burning does not have local news media. The public notice must be issued as directed by the department and must

(1) state the name of the person conducting the burn;

(2) provide a list of material to be burned;

(3) provide a telephone number to contact the person conducting the burn before and during the burn;

(4) for a surprise fire drill, state

(A) the address or location of the training; and

(B) the beginning and ending dates of the period during which a surprise fire drill may be conducted (this period may not exceed 30 days); and

(5) for open burning other than a surprise fire drill, state the expected time, date, and location of the open burning.

(k) **Complaints.** A person required to provide public notice of open burning shall

(1) make a reasonable effort to respond to complaints received about the burn;

(2) keep, for at least 30 days, a record of all complaints received about the burn, including to the extent feasible;

(A) the name, address, and telephone number of each person who complained;

(B) a short summary of each complaint; and

(C) any action the person conducting the open burning took to respond to each complaint; and

(3) upon request, provide the department with a copy of the records kept under (2) of this subsection. (Eff. 1/18/97, Register 141; am 2/28/2015, Register 213; am 3/6/2016, Register 217)

Authority: AS 46.03.020 AS 46.14.010 AS 46.14.030
AS 46.03.710 AS 46.14.020 Sec. 30, ch. 74, SLA 1993

AS 46.14.990 DEFINITION.

(2) "ambient air" has the meaning given in 40 C.F.R. 50.1;

40 C.F.R. 50.01 DEFINITION

(e) *Ambient air* means that portion of the atmosphere, external to buildings, to which the general public has access.

18 AAC 50.990 DEFINITIONS.

(15) "black smoke" means smoke having the color of emissions produced by the incomplete combustion of toluene in the double wall combustion chamber of a smoke generator;

(38) "fire service" means a

(A) fire department registered with the state fire marshal under 13 AAC 52.030; and

(B) wildland fire suppression organization within the Department of Natural Resources, United States Forest Service, or United States Bureau of Land Management/Alaska Fire Service;

(47) "impairment of visibility" means any humanly perceptible change in visibility from that which would have existed under natural conditions; in this paragraph, "change in visibility" includes light extinction, atmospheric discoloration, and any other change in visual range, contrast, or coloration;

(65) "open burning"

(A) means the burning of a material that results in the products of combustion being emitted directly into the ambient air without passing through a stack, flare, vent, or other opening of an emissions unit from which an air pollutant could be emitted;

(B) does not include

- (i) a campfire;
- (ii) a barbecue;
- (iii) a ceremonial fire;
- (iv) use of a candle;
- (v) the use of a cigar, cigarette, or pipe;
- (vi) the use of celebratory fireworks;

(67) "organic vapors" means any organic compound or mixture of compounds evaporated from volatile liquid or any organic compound or mixture of compounds in aerosols formed from volatile liquid;

(82) "practical means available" means, when approving the open burning of liquid hydrocarbons produced during oil or gas well testing, that all alternative disposal methods will have been analyzed and, where an environmentally acceptable procedure exists, that procedure will be required;

(86) "putrescible garbage" means material capable of being decomposed with sufficient rapidity to cause nuisance or obnoxious odors;

(89) "reduction in visibility" means the obscuring of an observer's vision;

93) "responsible official" means

(A) for a corporation, a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation, or a duly-authorized representative of that person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under AS 46.14 or this chapter, and

(i) the facilities employ more than 250 persons or have gross annual sales or expenditures exceeding \$25 million in second quarter 1980 dollars; or

(ii) the delegation of authority to the representative is approved in advance by the department;

(B) for a partnership or sole proprietorship, a general partner or the proprietor, respectively; and

(C) for a public agency, a principal executive officer or ranking elected official; for the purposes of this chapter, a principal executive officer of a federal agency includes the chief executive officer with responsibility for the overall operations of a principal geographic unit in this state;

(99) "smolder" means to burn and smoke without flame;

(114) "uncontaminated fuel" means a hydrocarbon fuel, excluding propane, that does not contain used oil, crude oil, or a hazardous waste;

(Eff. 1/18/97, Register 141; am 6/14/98, Register 146; am 6/21/98, Register 146; am 9/4/98, Register 147; am 11/4/99, Register 152; am 1/1/2000, Register 152; am 2/2/2002, Register 161; am 5/3/2002, Register 162; am 11/15/2002, Register 164; am 8/8/2003, Register 167; am 10/1/2004, Register 171; am 12/3/2005, Register 176; am 12/30/2007, Register 184; am 7/25/2008, Register 187; am 4/1/2010, Register 193; am 12/9/2010, Register 196; am 9/17/2011, Register 199; am 9/14/2012, Register 203; am 10/6/2013, Register 208; am 11/9/2014, Register 212; am 2/28/2015, Register 213; am 4/17/2015, Register 214; am 3/2/2016, Register 217; 1/12/2018, Register 225; am 9/15/2018, Register 227; am 1/8/2020, Register 233; am 11/7/2020, Register 236)

Authority:	AS 44.46.025	AS 46.14.140	AS 46.14.250
	AS 46.03.020	AS 46.14.150	AS 46.14.255
	AS 46.03.710	AS 46.14.160	AS 46.14.280
	AS 46.14.010	AS 46.14.170	AS 46.14.285
	AS 46.14.020	AS 46.14.180	AS 46.14.290
	AS 46.14.030	AS 46.14.210	AS 46.14.300
	AS 46.14.120	AS 46.14.230	AS 46.14.560
	AS 46.14.130	AS 46.14.240	Sec. 30, ch. 74, SLA 1993

18 AAC 50.245.-246 AIR EPISODES AND ADVISORIES.

18 AAC 50.245. Air quality episodes and advisories for air pollutants other than PM-2.5. (a) The department or a local air quality control program may declare an air quality episode and prescribe and publicize curtailment action if the concentration of an air pollutant in the ambient air has reached, or is likely in the immediate future to reach, any of the concentrations established in Table 6 in this subsection.

Table 6.
Concentrations Triggering an Air Quality Episode for Air Pollutants Other Than PM-2.5

Episode Type	Air Pollutant	Concentration in micrograms per cubic meter {and in ppm where applicable}
Air alert	Sulfur dioxide	365 (24-hour average) {0.14 ppm}
	PM-10	150 (24-hour average)
	PM-10 from wood burning (wood smoke control areas)	92 (24-hour average)
	Carbon monoxide	10,000 (8-hour average) {8.7 ppm}
Air warning	Sulfur dioxide	800 (24-hour average) {0.31 ppm}
	PM-10	350 (24-hour average)
	Carbon monoxide	17,000 (8-hour average) {15 ppm}
Air emergency	Sulfur dioxide	1,600 (24-hour average) {0.61 ppm}
	PM-10	420 (24-hour average)
	PM-10 from wood burning (wood smoke control areas)	During an air alert, a concentration measured or predicted to exceed 92 (24-hour average), and to continue to increase beyond the concentration that triggered the air alert
	Carbon monoxide	34,000 (8-hour average) {30 ppm}

(b) The department or a local air quality control program will declare an air quality advisory if, in its judgment, air quality or atmospheric dispersion conditions exist that might threaten public health.

(c) If the department or a local air quality control program declares an air quality advisory under (b) of this section, the department or a local air quality control program will

(1) request voluntary emission curtailments from any person issued a permit under this chapter whose stationary source's emissions might impact the area subject to the advisory; and

(2) publicize actions to be taken to protect public health.

(d) Nothing in this section alters a local government's powers or obligations under a local air quality control program established under AS 46.14.400 and other local laws, as applicable. (Eff. 1/18/97, Register 141; am 10/1/2004, Register 171; am 2/28/2015, Register 213)

Authority: AS 46.03.020 AS 46.14.020 Sec. 30, ch. 74, SLA 1993
AS 46.14.010 AS 46.14.030

18 AAC 50.246. Air quality episodes and advisories for PM-2.5. (a) The department or a local air quality control program may declare an air quality episode and prescribe and publicize the actions to be taken if the concentrations of PM-2.5 in the ambient air has reached, or is likely in the immediate future to reach, any of the concentrations established in Table 6a in this subsection. The episode thresholds and actions prescribed for any area that has a local air quality plan included in the *State Air Quality Control Plan* adopted by reference in 18 AAC 50.030 must be consistent with the emergency episode provisions included in that plan.

Table 6a

Concentrations Triggering an Air Quality Episode for PM-2.5

Episode Type	Air Pollutant	Concentration in micrograms per cubic meter
Air alert	PM-2.5	35.5 (24-hour average)
Air warning	PM-2.5	55.5 (24-hour average)
Air emergency	PM-2.5	150.5 (24-hour average)

(b) The department or a local air quality control program authorized by the department under AS 46.14.400 will declare a PM-2.5 air quality advisory if, in its judgment, PM-2.5 air quality or atmospheric dispersion conditions exist that might threaten public health.

(c) If the department or a local air quality control program declares a PM-2.5 air quality advisory under (b) of this section, the department or a local air quality control program will

(1) request voluntary emission curtailments from any person issued a permit under this chapter whose stationary source's emissions might impact the area subject to the advisory; and

(2) publicize actions to be taken to protect public health.

(d) Nothing in this section alters a local government's powers or obligations under a local air quality control program established under AS 46.14.400 and other local laws, as applicable. (Eff. 2/28/2015, Register 213)

Authority: AS 46.03.020 AS 46.14.020 Sec. 30, ch. 74, SLA 1993
AS 46.14.010 AS 46.14.030

ARTICLE 4. USER FEES.

18 AAC 50.400. PERMIT ADMINISTRATION FEES.

(g) The fee for department review of and routine compliance services for a request for open burning under 18 AAC 50.065 is \$230. If the department determines that smoke incursion into a public place, into an airport, into a Class I area, into any nonattainment area, or into any maintenance area is likely, all additional costs will be charged in accordance with (h) of this section.

(h) Unless the designated regulatory service is subject to a fixed fee set out in (a) – (g) of this section, or to the terms of a negotiated service agreement under AS 37.10.052(b) and 18 AAC 50.403, the permittee, owner, or operator shall pay an hourly permit administration fee for a designated regulatory service. The department will calculate the total amount due under this subsection by multiplying the number of hours spent to provide the designated regulatory service by the hourly rate of salary and benefits of the department employees who provided the designated regulatory service, and by adding to the resulting amount any other direct costs.

(Eff. 1/18/97, Register 141; am 6/21/98, Register 146; am 10/1/2004, Register 171; am 12/1/2004, Register 172; am 1/29/2005, Register 173; am 12/30/2007, Register 184; am 7/25/2008, Register 187; am 7/1/2010, Register 194; am 9/14/2012, Register 203; am 9/26/2015, Register 215; am 9/15/2018, Register 227)

Authority:	AS 37.10.050	AS 44.46.025	AS 46.14.140
	AS 37.10.052	AS 46.03.020	AS 46.14.240
	AS 37.10.058		

AREA-WIDE POLLUTANT CONTROL EFFORTS FOR OPEN BURNING

Control of open burning incidences for air pollution is the responsibility of the DEC. Open burning is defined as, "the burning of a material that results in the products of combustion being emitted directly into the ambient air without passing through a contaminant outlet." All open burning in the state, whether requiring written approval from the DEC or not, must be done in a way that maintains maximum combustion efficiency throughout the burning period.

Open burning at landfills is also controlled by solid waste disposal regulations, 18 AAC 60.355. Open burning is prohibited at Class I and II landfills.

MATERIALS THAT CANNOT BE OPEN BURNED:

- Spill absorbents and contaminated soils that are RCRA hazardous waste.
- Pesticides, halogenated organic compounds, cyanic compounds, or polyurethane products burned in a way that gives off toxic or acidic gases or particulates.
- Putrescible garbage, animal carcasses, or petroleum-based materials burned in a way that causes odor or black smoke that may have an adverse effect on nearby persons or residences.
- Electrical batteries, all types and sizes.
- All liquid-form paints (e.g. in cans).
- Lead-based painted wood debris, if classified as RCRA hazardous waste. For more guidance concerning wood with lead-based paint, please contact EPA RCRA office, Diane Richardson, at 907-271-6329.

- All solvents, except those composed of water and soap/detergent solutions.
 - All aerosol cans, except that those do not use chloro- or fluoro- carbon propellants.
 - Asbestos or any metals or alloys containing beryllium, chromium, cobalt, arsenic, selenium, cadmium, mercury, lead, or any radioactive wastes.
 - Any electrical or electronic lamps or components that contain any of the above metals/alloys (including fluorescent, high-pressure sodium, mercury vapor, and metal halide lamps).
 - Any plastics or other materials containing chlorine as an essential component (such as Polyvinyl Chloride - PVC pipe). However, empty containers containing salt residue may be burned (salt is any metal chloride used for thawing or ion exchange).
 - Tires.
 - Treated wood containing compounds such as creosote, naphthalene, or tar.
-

WHO NEEDS WRITTEN APPROVAL?

Certain types of open burning require written approval from the DEC prior to the incident. These include:

1. Controlled Burning for Land Clearing:

Open burning of woody debris material by farmers and developers requires written DEC approval if the intent is to clear and burn 40 acres or more per year. DEC will, in its discretion, require public notice. Open burning should be done, as rapidly and safely as other considerations permit, to develop maximum heat energy per unit time and vent the smoke to the highest elevation possible. The burn material should be as dry as possible to create a high heat energy, less smoke, and a more efficient burn. Additional requirements for land clearing burns are outlined in the ESMP.

2. Controlled Burning For Resource Management (Prescribed Burning):

Prescribed burning, intentionally set fires to burn off ground and forest cover, is usually, but not always, done by land management agencies. Prescribed burning is subject to obtaining written DEC approval if the intent is to clear 40 acres or more in a year. DEC will, in its discretion, require public notice. Additional requirements for resource prescribed burns are outlined in the ESMP.

3. Fire Fighter Training:

Fire fighter training using structures or fuels must be conducted pursuant to 18 AAC 50.065(b), (h), and (i) and requires written DEC approval. Public notification is required unless DEC issues a written waiver for burns conducted in remote areas,

where the news media is not generally available, or where no public will be affected.

A fire service may ignite and conduct training on only one main structure and its associated smaller structures at a time; examples of associated smaller structures are garages, sheds, and other outbuildings within close proximity to the main structure. Structures must be inspected for hazardous wastes and other nonburnables prior to ignition. Materials listed on the “**MATERIALS THAT CANNOT BE OPEN BURNED**” list (page 9 of this Guidance) are to be removed from the structure prior to ignition.

A fire service may open burn up to 250 gallons of uncontaminated fuel daily and up to 600 gallons yearly for fire fighter training without prior DEC approval, provided that the fire service give public notice of the event before burning more than 20 gallons of fuel and responds to complaints in accord with 18 AAC 50.365(j) and (k) respectively.

Fire fighter training shall be conducted pursuant to 18 AAC 50.065(b) and (h) and is subject to written DEC approval. Public notification is required according to 18 AAC 50.065(j).

4. Burning Materials that Produce Black Smoke:

Open burning of petroleum-based materials, asphalt, rubber products, or other materials in a way that give off black smoke is subject to obtaining written DEC approval. In addition, DEC will, in its discretion, require public notice.

Open burning should be done using reasonable procedures to minimize adverse environmental effects and limit the amount of smoke generated.

Open burning of oil or gas well flow tests must conform to 18 AAC 50.065(b)(1) and the guidance contained in the In situ Burning Guidelines for Alaska. DEC intends to eliminate open burning of liquid hydrocarbons because alternative measures are generally available. If alternatives become unusable because of equipment breakdown or inclement weather, such events do not constitute the non-availability of alternatives.

OPEN BURNING PROHIBITION:

Open burning can be prohibited on an area-by-area basis if DEC issues an air quality advisory covering the area of concern. This advisory can be for a maximum of twenty-four hours but may be renewed daily. The advisory will be based on an assessment that inadequate air ventilation is available which would inhibit the dispersal of pollutants, such as inversions and low wind speeds.

AWFCG Alaska Fire Restriction Levels

The purpose of this document is to provide a uniform statewide system to aid fire staff in proposing and communicating local, state, and federal fire restrictions to the public in Alaska.

This interagency document is a reference guide to clarify the definitions of fire use for the public relative to general restriction levels.

Agency contacts must be identified annually to coordinate fire restrictions for their respective agency land ownership, to obtain approval within their agency, and coordinate public outreach. The contact list will be disseminated at the AWFCG Spring Operations meeting each March. Public outreach and messaging must clarify, as needed, that open burning activities may require compliance with regulations from multiple agencies within one geographic area.

Designated Area of Restrictions

Fire restrictions are implemented based on fire indices and corresponding fire danger levels with consideration for preparedness levels, resource availability, land use status, and socio-political concerns. They may be implemented statewide or directed at specific areas. Cooperating agencies will coordinate to identify the boundaries of temporal fire restriction levels prior to disseminating specific restrictions to the public. Whenever possible, fire restriction boundaries should be commonly known geographic features or administrative boundaries that are easily communicated to the public through multiple media channels including verbal and visual methods. See Appendix A for the agency contact list.

Legal Authorities

Individual agencies remain responsible for implementing restrictions within their jurisdiction according to their own policies and procedures. Generally, the authority to implement or rescind fire restrictions resides with an agency administrator or other public official, and fire staff are responsible for coordinating the level of restriction needed and outreach to the public. Reference Alaska Fire Restrictions at <https://dec.alaska.gov/air/anpms/alaska-fire-restrictions/> for the statewide compilation by jurisdiction. Reference the Alaska Interagency Wildland Fire Management Plan's Table 1. Alaska Jurisdictional Agencies based on Ownership / Land Status.

Restriction Levels

The restriction levels are relative categories used for the application of fire restrictions when multiple agencies are experiencing very high to extreme fire danger and/or limited resource availability across a large geographic area. These levels are not defined by statute or regulation. Designation of the level is made by agreement between agency authorities and line officers recommending protections.

Table A outlines what activities are prohibited and allowed during the levels of restrictions. All activities listed here are subject to private, local, state, federal, and native trust burning requirements and limitations.

Table A – Restrictions Table

Activity	No Restrictions	Level 1	Level 2	Level 3	Notes/Reference
Burning of brush/debris piles, use of burn barrels, burning of lawns, and other types of open burning which may be regulated under a state or local burn permitting system.	Allowed ¹	Prohibited	Prohibited	Prohibited	¹ Subject to landowner, Alaska DNR, Alaska DEC, and local permitting requirements and limitations. This activity is generally prohibited on federally administered lands but subject to local jurisdiction approval.
Campfires in unimproved or dispersed camp sites, such as gravel bars, beaches, and remote/backcountry locations.	Allowed	Prohibited	Prohibited	Prohibited	
Campfires in designated campgrounds and fire rings.	Allowed	Allowed²	Prohibited	Prohibited	² In Level 1, campfires must be 3 feet or less in diameter with flame lengths no more than 2 feet high.
Cooking and warming devices that operate using charcoal briquets, wood pellets, or any other exposed fuel source that <u>cannot be immediately shut off</u> via a commercially manufactured and installed off/on switch or fuel flow shut off valve.	Allowed	Allowed	Prohibited	Prohibited	
Commercially manufactured cooking and warming devices that can be immediately shut off with an installed off/on switch or fuel flow shut off valve.	Allowed	Allowed	Allowed	Prohibited	
Any other activity that may involve the use or creation of an open flame for burning including: DEC approved waste disposal sites, gas and oil flares, outdoor shooting ranges, live fire training undertaken by a registered fire department, outdoor licensed food vendors, etc.	Shall be at the discretion of the government agency having jurisdictional oversight.				

The sale and personal and/or commercial use of fireworks	Subject to borough or municipality ordinance and landowner restrictions. If none apply, under all Levels it shall be at the discretion of the State Fire Marshal's office in areas where the DNR has declared the wildfire danger to be high, very high, or extreme, or there are depleted firefighting resources (Reference 13AAC 50.025 and International Fire Code 5608.11.14).
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BURN PLAN APPROVAL GUIDELINES

APPROVAL ISSUANCE:

Volume II, Section III-F of the Alaska Air Quality Control Plan incorporated by reference under 18 AAC 50.030 lists the requirements for obtaining approval to open burn. DEC has up to 30 days to issue an approval. Written approval is not automatic but must be evaluated for conformance with the following guidelines.

A contingency plan should be prepared in case of unforeseen changes in weather or other uncontrollable parameters that would affect your burn and the resultant smoke. Persons with approval must curtail their fire if air in the area is becoming overloaded or local weather factors would create smoke problems, even though no other restrictions have been imposed (i.e. wind moving directly into sensitive areas, inversions, etc.).

If any safety hazard is present, you must extinguish the fire as soon as possible. You will be held legally responsible for any accident or adverse health effects that occur because of your open burn.

The guidelines of a burn plan should include the following:

1. Indicate the location, duration, and inclusive dates considered for the burn

Provide a legal description or latitude and longitude of the location to be burned and the expected duration of both single events and the entire burning project. Minor changes or additional information for the burn plan can be discussed at the time DEC is notified by phone. At a minimum, the applicant is required to call DEC by noon at least one working day prior to ignition. Call the number listed in the Open Burn Approval Letter.

2. Identify the location of all sensitive features that might be impacted by smoke

The Responsible Authority should identify on a map all sensitive features, which include population centers such as communities, cities, towns, hospitals, health clinics, nursing homes, schools (in session), campgrounds, numbered Alaska highways and roads, airports, Prevention of Significant Deterioration Class I areas, and any other areas where smoke and air pollutants can adversely affect public health, safety, and welfare.

3. Indicate how the public will be informed prior to, during, and after the burning

The best way to avoid complaints is to make sure everyone around the burn area knows when the burn will occur so they can take steps to avoid the smoke. The Responsible Authority's local contact phone number should be publicized so the public can contact you. The public must be notified at least three days prior to the anticipated burn through the local news media or the local Post Office.

4. Indicate how coordination with other concerned agencies, including the Responsible Authorities of sensitive features, will be carried out

Indicate how all concerned agencies will be notified prior to ignition, including authorities in control of sensitive features identified in item 2 (such as the FAA, State Troopers, military, fire department, adjacent land managers, etc.) who are potentially affected by impaired visibility or adverse smoke impacts. Include a list of telephone numbers or email addresses of agencies that must be contacted prior to ignition.

The Department of Natural Resources, Division of Forestry (DOF) also issues burn permits; contact DOF to determine what requirements apply. The DOF burn permits are in addition to DEC burn approvals and address fire safety and other issues.

5. Indicate the source of the weather forecast and how it will be used to prevent smoke impacts

Identify how the local and spot weather forecast will be obtained (e.g., through the NWS) prior to ignition of the controlled burn. Parameters that should be obtained are the predicted visibility, dispersion conditions, wind direction, and wind speed.

6. Indicate how weather changes will be monitored and what will be done to reduce or mitigate smoke impacts if unfavorable weather should occur after ignition

Indicate how the weather will be monitored throughout the controlled burn. Identify what actions will be taken if a wind shift or other weather change begins to create an adverse smoke impact on sensitive features identified in Item 2. For example, if an inversion is expected to occur during the night, active ignitions could be ceased.

If any safety hazard is present as a result of smoke, or if requested by the authority of a sensitive feature, all technologically feasible and economically and environmentally reasonable steps to mitigate smoke impacts must be taken.

7. Indicate what will be done to validate predicted smoke dispersion

Indicate how smoke dispersion will be predicted. If a recommended method (test fire, small piles or areas, etc.) fails to indicate that acceptable smoke dispersion will occur, no fires will be ignited.

8. Indicate proposed techniques to be used to enhance the active fire phase and reduce the smoldering phase

Consider employing emission reduction techniques (Appendix D) to enhance the active fire

phase and reduce smoldering, and indicate what is feasible to accomplish the burn objectives.

9. Indicate how authorities in control of sensitive features will be contacted if visibility decreases

Provide a contingency plan (Appendix E) for smoke intrusion into populated areas, Class I areas, or other smoke sensitive features as notified in item 2. Authorities having control over sensitive features identified in item 2 must be notified if visibility is expected to be decreased to less than three miles for an hour. Indicate how authorities of sensitive features will be notified if this occurs. If any safety hazard is present, or if requested by the authority of a sensitive feature, impacts must be mitigated through steps that are technologically feasible and economically and environmentally reasonable. Contingency or emergency monitoring may be needed to measure and detect smoke intrusions on sensitive features.

10. Identify alternative disposal options for material being controlled burned

An evaluation of alternatives to controlled burning (Appendix F) must demonstrate that controlled burning is the only technologically feasible and economically and environmentally reasonable alternative. Identify other alternative disposal options for material burned (e.g., marketing timber with a lumber company), why burning is the selected alternative and why the alternatives were not used; or list any alternatives to burning that have been done to the burn units prior to ignition.

11. Indicate how coordination with air quality authorities having jurisdiction will take place

At a minimum, notify DEC by telephone by noon one business day prior to ignition. Call the number listed in the Open Burn Approval Letter. Include the 11 items in Section 2.2. If a multiple day burn is planned, the responsible authority need only call before the first ignition day. A call to DEC after a multiple day burn is completed is requested. If the burn is not conducted, please notify DEC within 24 hours to schedule a new burn date.

12. Indicate the type of vegetation to be burned, pre-burn and post-burn fuel loading estimates, and ignition technique to be used

Pre-burn fuel loading represents the amount of fuel present at the burn location (to be consumed) and should be expressed as the weight of fuel per unit area in tons per acre. The post-burn loading estimate represents the fuel remaining after the burn. The ignition technique should describe the method (e.g., hand ignition, drip torch, helitorch) and technique (e.g., strip head fire, backing fire, etc.)

13. For prescribed fires, indicate whether the fire is needed for land management purposes.

The RH Rule allows the state to adjust its uniform rate of progress towards “natural visibility” and deduct wildfire and prescribed fire emissions (wildland prescribed fires)

that were conducted with the objective to establish, restore, and/or maintain sustainable and resilient wildland ecosystems; to reduce the risk of catastrophic wildfires; and/or to preserve endangered or threatened species during which appropriate basic smoke management practices were applied.¹³

14. Provide the approximate emissions expected for each burn and method used to estimate. Note: Emission estimates for Land Clearing Burns will be calculated by DEC.¹

Emissions can be estimated by multiplying the amount of fuel consumed (usually expressed in tons), by an emission factor expressed in pounds per ton of fuel. Emission factors can be found on EPA's website at <http://www.epa.gov/ttn/chief/ap42/ch13/>. Other emission factors or methods may also be used, including, but not limited to: CONSUME, FEPS, FOFEM, PFEP, and SASEM (Appendix D).

15. Air monitoring to be conducted

Identify how the burn may affect or potentially impact air quality at smoke sensitive features, and how the visibility in Class I areas will be monitored (Appendix G). If the burn will not adversely affect visibility in a Class I area, state that there is low potential of the burn impacting visibility in a Class I area and that monitoring will not be conducted.

¹ <http://www.wrapair.org/forums/fejf/docs.html>

¹³ 51.308 (f)(vi) (B)

Appendix C

Open Burning Approval Applications

**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF AIR QUALITY, AIR PERMITS PROGRAM**

Anchorage Compliance Office Supervisor

555 Cordova Street

Anchorage, AK 99501

OPEN-BURNING APPROVAL APPLICATION

Controlled Burning for Resource Management

*Prescribed burning, intentionally setting fires to burn off ground and forest cover, is usually, but not always, done by land management agencies. Prescribed burning requires written DEC approval before starting the burn if the intent is to burn, or clear and burn **a total of 40 acres or more during a year.***

When conducting prescribed burning, Permit Holders shall follow the Enhanced Smoke Management Plan (ESMP). The ESMP is an agreement and program plan developed and agreed upon by the Alaska Wildland Fire Coordinating Group. The purposes of the ESMP is to mitigate the nuisance, health and safety hazards to transportation, such as, roadway and airport visibility impairment, smoke sensitive features (such as hospitals, schools, and clinics) posed by smoke intrusions into populated areas; to prevent deterioration of air quality and Alaskan Ambient Air Quality Standard violations; and to reduce visibility impacts in mandatory Class I Federal Areas in accordance with Regional Haze Rules.

Note: Please type or cut/paste your responses into the appropriate cells; the cells will expand as required.

Person(s) Responsible:

Project Contact:		Phone Number:	
Land Owner:		Fire Manager:	
Mailing Address:		Mailing Address:	
Phone Number:		Phone Number:	

Emergency contact number(s) in case of smoke intrusion:

Name (1 st Priority):		Name (2 nd Priority):	
Title / Agency		Title / Agency:	
Primary contact Phone #:		Primary contact Phone #:	

Cell or other contact #:		Cell or other contact #:		Cell or other contact #:	
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1. LOCATION AND DATES OF PROPOSED BURN

Indicate the location, duration, and inclusive dates considered for the burn:

Legal Description of Burn Site(s) ¹ :			
Physical Location of Burn Site(s):			
Latitude/Longitude of Burn Site(s) ² :			
Anticipated Burn Date(s):	Anticipated Duration of Each Event:		

1. Include approximate coordinates derived from the Public Land Survey System using township, range and section numbers.
2. If unable to provide legal description, provide Latitude and Longitude of burn in decimal degrees.

2. BURN SUMMARY

Location of Burn (please check):

<input type="checkbox"/>	KP = Kenai Peninsula	<input type="checkbox"/>	DJ = Delta Junction
<input type="checkbox"/>	SE = Southeast	<input type="checkbox"/>	AL = Aleutian (inc. Kodiak, Iliamna)
<input type="checkbox"/>	MS = Mat-Su Borough	<input type="checkbox"/>	FBX = areas north of Talkeetna
<input type="checkbox"/>	OL = Other Location, please specify:		

One time event? (yes or no)		Multiple Events? (yes or no)	
Total acreage to be burned and/or cleared and burned:			
Acreage to be burned in piles (yes or no)			
Acreage to be burned per event (if applicable):			
Permit Approval Requested Length:	<input type="checkbox"/>	1 Year	<input type="checkbox"/>
		Multi-Year	
If a multi-year permit approval is requested, indicate which portions of the projects will be burned during each of the following years. Multi-Year permits will require a renewal application each year and are subject to the same fee. Attach a map as necessary to further indicate where/when burning will occur.			

Indicate the type of vegetation to be burned (please check):

<input type="checkbox"/>	1 = Broadcast, forested, not piled, heavy	<input type="checkbox"/>	4 = Machine piled slash
<input type="checkbox"/>	2 = Range/tundra	<input type="checkbox"/>	5 = Hand piled slash
<input type="checkbox"/>	3 = Grass	<input type="checkbox"/>	6 = Understory burns, brush

Pre-burn and post-burn fuel loading estimates:	
Size class (inches diameter):	Tons/acre (estimated):
0.00 to 0.25	
0.25 to 1.00	
1.00 to 3.00	
3.00 to 9.00	
Live Crown Mass	
Above Ground Mass	
Duff Layer (DMC, DC)	
Total:	
Ignition techniques to be used (please describe):	

3. SMOKE MANAGEMENT						
Have you developed a Smoke Management Plan for this burn (please check)?						
<input type="checkbox"/>	Yes (Please attach and show ratings below)			<input type="checkbox"/>	No [Complete Attachment 1 (Smoke Complexity) and provide ratings below]	
The Smoke Management Complexity ratings for this open burn are (check appropriate category):						
Risk:	<input type="checkbox"/>	Low (1 point)	<input type="checkbox"/>	Moderate (2 points)	<input type="checkbox"/>	High (3 points)
Potential Consequences:	<input type="checkbox"/>	Low (1 point)	<input type="checkbox"/>	Moderate (2 points)	<input type="checkbox"/>	High (3 points)
Technical Difficulty:	<input type="checkbox"/>	Low (1 point)	<input type="checkbox"/>	Moderate (2 points)	<input type="checkbox"/>	High (3 points)

Complete Attachment 2 (Public Health Impact Complexity) included with this application. Summarize the Smoke Management Public Health Impact Complexity below (check appropriate category):						
Risk:	<input type="checkbox"/>	Low (1 point)	<input type="checkbox"/>	Moderate (2 points)	<input type="checkbox"/>	High (3 points)
Potential Consequences:	<input type="checkbox"/>	Low (1 point)	<input type="checkbox"/>	Moderate (2 points)	<input type="checkbox"/>	High (3 points)
Technical Difficulty:	<input type="checkbox"/>	Low (1 point)	<input type="checkbox"/>	Moderate (2 points)	<input type="checkbox"/>	High (3 points)

Indicate the overall Smoke Management / Public Health Impact Complexity Rating Score for this burn (i.e., the total score of the above six ratings points): <i>Overall rating may be reduced through smoke mitigation efforts outlined in the complexity rating descriptions.</i>						
Revised overall smoke /health complexity rating with mitigation applied:	<input type="checkbox"/>	Low (6-8 points)	<input type="checkbox"/>	Moderate	<input type="checkbox"/>	High

				(8-12 points)		(>12 points)
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Indicate whether the fire is needed to manage natural resource objectives and whether it is located on “wildlands”.

Define the natural resource objectives of this burn activity:

Frequency of prescribed fire at this location and provide date for last burn activity

Definitions:

Prescribed fire is “any fire intentionally ignited by management actions in accordance with applicable laws, policies, and regulations to meet specific land or resource management objectives.” 40 CFR 50.1(m)

Wildfire is “any fire started by an unplanned ignition caused by lightning; volcanoes; other acts of nature; unauthorized activity; or accidental human-caused actions, or a prescribed fire that has developed into a wildfire” (emphasis added).

Wildland is “an area in which development is essentially non-existent, except for roads, railroads, powerlines, and similar transportation facilities. Structures, if any, are widely scattered.” Land within national parks, national forests, wilderness areas, state forests, state parks, and state wilderness areas are generally considered wildland. Land outside cantonment areas on military bases may also be considered wildland.

4. SENSITIVE FEATURES

Sensitive Features include population centers such as communities, cities, towns, hospitals, health clinics, nursing homes, schools (in session), camp grounds, numbered Alaska highways and roads, airports, Prevention of Significant Deterioration Class I Areas, nonattainment areas, where smoke and air pollutants can adversely affect public health, safety, and welfare.

Include a map of the proposed burn area.

- a. Indicate multiple burn sites (if any) within the proposed burn area;
- b. List sensitive features as described below that may be adversely affected by low level smoke and distance of those areas from proposed burn area(s);
- c. List sensitive features that may be adversely affected long range transport of smoke and distance of those areas from proposed burn area(s).

How many maps are attached?	
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5. MITIGATION: <i>If any safety hazard is present, or if requested by the authority of a Sensitive Feature, you must mitigate impacts through steps that are technologically feasible and economically and environmentally reasonable. Contingency or emergency monitoring may be needed to measure and detect smoke intrusions on Sensitive Features. Failure to have an effective mitigation measure may, in some cases, result in the application not being approved.</i>				
Indicate how authorities in control of Sensitive Features will be contacted if air quality degrades (visibility may be used as an indicator of air quality). Provide a contingency plan for smoke intrusion into Sensitive Feature areas. Indicate how you will notify Authorities having control over Sensitive Features identified above if visibility is expected to be decreased to less than three miles for an hour.				
Have you reviewed the ADEC Smoke Management Plan? y/n				
Is the burn expected to generate low level smoke, transported locally?		Yes		No
If yes, could people coming into the proposed burn locality be adversely affected by smoke?		Yes		No
If yes, what mitigation practices / contingency plans are proposed to help keep the smoke from affecting Sensitive Features near to the burn site?				
Is the burn expected to be large enough (>1000 acres) or hot enough to create a smoke plume that is transported to upper level air currents?		Yes		No
If yes, what mitigation practices / contingency plans are proposed to help keep the smoke from affecting Sensitive Features far from the burn site?				

6. PUBLIC NOTICE <i>The Responsible Authority's / Fire Manager's local contact phone number should be publicized. The public must be notified at least three days prior to the anticipated open burn through the local news media or the local Post Office.</i>
Indicate how the public will be informed prior to, during, and after the burning. How will you notify persons in control of the sensitive features identified on your map of your anticipated burn?

Indicate how you will coordinate with other concerned agencies, including the Responsible Authorities of sensitive features identified above (such as the FAA, State Troopers, military, fire department, adjacent land managers, etc.) Include a list of telephone numbers or email addresses of agencies you will contact prior to ignition.

Indicate how you will coordinate with DEC Air Quality. *At a minimum, the DEC Meteorologist must be notified two (2) weeks prior to anticipated project ignition (907-269-7676). If your application is approved, a conference should be scheduled for 24 - 96 hours prior to the actual burn, or by noon the business day prior to scheduled burns to be conducted during the weekend for a burn-weather call.*

Attach a copy of your approval for the DNR - Forestry Division Large Scale Permit for your planned activity, or explain below why a DNR Burn Permit is not required.

7. METEOROLOGICAL / WEATHER FORECASTING

The Division's meteorologist is responsible for ensuring, from the Department's standpoint, that smoke from a prescribed burn does not adversely impact the public. To allow their participation in the burn decision making process, please ensure that this application is completed and submitted at least 2 weeks prior to a scheduled burn so they can participate in pre-burn planning events 1-2 days prior to ignition.

Indicate how weather forecasts will be obtained and used to prevent smoke impacts. *Identify how the local and spot weather forecast will be obtained prior to ignition of the open burn. Parameters that should be obtained are the predicted visibility, dispersion conditions, transport and local area wind direction, and wind speed.*

Indicate how weather changes will be monitored.

Explain what will be done to reduce or mitigate smoke impacts if unfavorable weather should occur after ignition. *If any safety hazard is present, or if requested by the Authority of a Sensitive Feature, you must take technologically feasible and economically and environmentally reasonable steps to mitigate smoke impacts.*

Identify what you will do if a wind shift or other weather change begins to create an adverse smoke impact on Sensitive Features previously.

Indicate what will be done to validate predicted smoke dispersion. *Note: If a test fire, small piles or areas fire, etc. fails to indicate that acceptable smoke dispersion will occur, no fires are to be ignited.*

Indicate proposed techniques to be used to enhance the active fire phase and reduce the smoldering phase. Consider employing emission reduction techniques before, during and after the fire. Indicate what is feasible to address the management objective.

Will air monitoring be conducted during the burn (check applicable boxes)?

No, monitoring will not be conducted during the burn. Explain why air quality monitoring for particulates should not be necessary for this burn.

Yes, monitoring will be conducted. Describe the numbers and placement of monitors to be used, how often the data will be collected / stored, how the results will affect the burn operations, and where the monitoring data can be accessed by DEC staff.

Identify how the effect of the fire on air quality at Sensitive Features, and visibility in Class I areas will be monitored.

The applicant will supply monitoring equipment and personnel (*Check Yes or No*)

YES

NO

The applicant requests DEC supply monitoring equipment and personnel, and acknowledges that time and materials will be charged for DEC services (*Check Yes or No*)

YES

NO

8. OTHER DISPOSAL OPTIONS

Identify alternative disposal options for material being open burned. *An evaluation of alternatives to open burning must demonstrate that open burning is the only technologically feasible and economically and environmentally reasonable alternative.*

Identify other alternative disposal options for material burned or explain why burning is the selected alternative and why the alternatives were not used.

List any alternatives to burning that have been done to the burn units prior to ignition.

Certification: (If signing as an Authorized Agent, please submit a copy of your authority to do so.)

Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete.

_____ Landowner Signature	_____ Date	_____ Fire Manager Signature	_____ Date	_____ Applicant Signature	_____ Date
_____ Printed Name of Landowner		_____ Printed Name of Fire Manager		_____ Printed Name of Applicant	

As of September 26, 2015, the fee for review of and routine compliance services for a request for Open Burning Approval is \$230. With each burn application please submit a \$230 administrative fee payable to the State of Alaska, DEC. If the department determines that a smoke incursion is likely as per 18 AAC 50.400(g), any additional costs will be billed on an hourly basis in accordance with 18 AAC 50.400(h). The applicant will be notified that DEC will charge an hourly administrative fee and direct costs for approval processing and administration. DEC will prepare and send a monthly invoice itemizing fees and direct costs to the applicant.

Send each open burn application and check to:

**ADEC Air Permits Program
Anchorage Compliance Office Supervisor
Open Burn Request
555 Cordova Street
Anchorage, AK 99501**

Your approval may be issued within 30 days (or sooner). If approved, notification and burn summary requirements will be outlined in your letter of approval.

*A copy of the open burning guidelines may be obtained through our website:
<https://dec.alaska.gov/air/air-permit/open-burn-info>*

Attachment 1

Prescribed Fire Complexity Rating System Guide

Smoke Management – Risk		
	Low	Smoke concerns are generally few or easily mitigated. The project will produce smoke for only a short period of time or is barely visible to the public. Smoke exposure or amounts are not expected to cause health or safety concerns to project personnel or the public. Members of the public have expressed few or no concerns about smoke.
	Moderate	Smoke concerns are moderate and some concerns require special mitigation. The project will produce smoke visible to the public over several days. Smoke exposures or amounts may cause some health or safety concerns over a short period of time. Members of the public have expressed some concerns about smoke.
	High	Smoke concerns are high and require special and sometimes difficult mitigation. Smoke will be readily visible to the public and last several days to weeks. Smoke exposures or amounts are likely to cause some health and safety concerns that will require special mitigation. Large segments of the public are concerned about smoke.

Smoke Management - Potential Consequences		
	Low	No impacts OR minor impacts to isolated residences, remote roads or other facilities are expected. Firefighter exposure to smoke is expected to be minimal and not cause health and safety concerns.
	Moderate	Vistas, roads, and some residences may experience short-term decreases in visibility. A few health related complaints may occur. Minor smoke intrusions may occur into smoke sensitive areas, but below levels that trigger regulatory concern. Project personnel may be exposed to dense smoke for short periods of time.
	High	Vistas, roads, and residences may experience longer-term decreases in visibility OR significant decreases in visibility over the short-term. Major smoke intrusions may occur into smoke sensitive areas, such as Class I airsheds, non-attainment areas, hospitals, and / or major airports, at levels that trigger regulatory concern. Project personnel may be exposed to dense smoke for prolonged periods of time.

Smoke Management - Technical Difficulty		
	Low	No special operational procedures are required. Limitations on wind direction, season, etc. may be present in the plan. No mitigation efforts are deemed necessary
	Moderate	Some considerations are needed in the prescription OR ignition portions of the plan. Burn window / opportunities are reduced by the required weather / dispersion conditions. Normal coordination with air quality officials is required. Some mitigation measures or additional smoke modeling may be needed to address potential concerns with smoke impacts. Specific smoke monitoring may be required to determine smoke plume heights

		and directions. Rotating project personnel out of dense smoke is necessary but easy to accomplish. Some mitigation efforts can be used and will be placed into effect as necessary.
	High	Special considerations are needed in the prescribed fire plan. Special smoke management techniques will be used. Burn window / opportunities are limited by the required weather / dispersion conditions. Special coordination with air quality officials is required. Accelerated mop up may be planned to reduce smoke impacts. Some mitigation measures or additional smoke modeling are required to address potential concerns with smoke impacts. Specific smoke monitoring is required to determine smoke plume heights and directions. Rotating project personnel out of dense smoke is necessary but may be difficult to accomplish. Mitigation efforts can be used, but are difficult or will not be applied.

Attachment 2

DEC Smoke Management Public Health Impact Complexity Rating System Guide

Smoke Management Public Health Impact – Risk		
	Low	Smoke will not extend into local communities or travel aloft to distant communities. Health risk minimal.
	Moderate	Smoke will be in and around the public with some potential impact to sensitive individuals.
	High	Smoke would impact communities in the vicinity of the fire or in the distance which will probably require healthy and sensitive individuals to take precautionary actions.

Smoke Management Public Health Impact - Potential Consequences		
	Low	Little impact on public health. No one expected to require hospitalization.
	Moderate	Some impact anticipated. Sensitive individuals may need to take action to protect themselves.
	High	The public will be impacted by smoke from this fire. Sensitive people and some healthy individuals will most probably be impacted and require medical attention or be required to take direct precautionary action such as staying indoor, using an air filtration system or taking medicine.

Smoke Management Public Health Impact - Technical Difficulty		
	Low	No special operational precautions or advisories require to protect public health.
	Moderate	Further consideration of operational actions will need to be undertaken to ensure protection of potentially impacted public. Monitoring will need to be planned and samplers deployed for potential use in protecting the public.
	High	Action will be required to protect public health. Monitoring will be necessary. Samplers will be set up and operated and advisories issued if smoke levels exceed EPA air quality thresholds.

Open Burn Approval Application for Controlled Burning for Land Clearing

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION DIVISION OF AIR QUALITY, AIR PERMITS PROGRAM

Anchorage Compliance Office Supervisor

555 Cordova Street

Anchorage, AK 99501

OPEN-BURNING APPROVAL APPLICATION CONTROLLED BURNING FOR LAND CLEARING

Open burning of woody debris material by farmers and developers requires written DEC approval before lighting if the intent is to burn, or clear and burn, 40 acres or more during a year.

When conducting land clearing or agricultural burning, landowners and/or developers are encouraged to follow the Enhanced Smoke Management Plan (ESMP). The ESMP is an agreement and program plan developed and agreed upon by the Alaska Wildland Fire Coordinating Group. The purposes of the ESMP are to mitigate the nuisance, health and safety hazards to transportation and smoke sensitive features posed by smoke intrusions into populated areas; to prevent deterioration of air quality and Alaskan Ambient Air Quality Standard violations; and to reduce visibility impacts in mandatory Class I Federal Areas in accordance with Regional Haze Rules.

Transportation concerns include roadway and airport visibility impairment; smoke sensitive features include hospitals, schools, clinics and etc.

Note: Please type or cut/paste your responses into the appropriate cells; the cells will expand as required.

Person(s) Responsible:

Project Contact:		Phone Number:	
Land Owner:			
Mailing Address:			

Physical Address:	
Phone Number:	

If the fire is being actively managed by someone other than the land owner, please provide their name and phone numbers:

Name:			
Phone Number:		Cell phone number:	

Emergency contact number(s) in case of smoke intrusion:

Name:	
Title / Agency	
Primary contact Phone #:	
Cell or other contact #:	

1. LOCATION AND DATES OF PROPOSED BURN	
Indicate the location, duration, and inclusive dates considered for the burn:	
Legal Description of Burn Site(s) ¹ :	
Physical Location of Burn Site(s):	
Latitude/Longitude of Burn Site(s) ² :	
Anticipated Burn Date(s):	Anticipated Duration of Each Event:

1. Include approximate coordinates derived from the Public Land Survey System using township, range and section numbers.
2. If unable to provide legal description, provide Latitude and Longitude of burn.

2. BURN SUMMARY	
Location of Burn (please check below). Please include a general map of the area showing where the burn is in relation to the nearest community or communities.	
<input type="checkbox"/> KP = Kenai Peninsula	<input type="checkbox"/> DJ = Delta Junction

	SE = Southeast		AL = Aleutian (inc. Kodiak, Iliamna)
	MS = Mat-Su Borough		FBX = areas north of Talkeetna
	OL = Other Location, please specify:		

	One time event? (yes or no)		Multiple Events? (yes or no)
Total acreage to be burned and/or cleared and burned:			
Acreage to be burned per event (if applicable):			
Estimated number of piles/berms:			
Estimated composition of piles/berms:			
Estimated pile/berm size:			
Do piles/berms contain less than 5% non-combustibles (such as soil, snow, or ice)?			
Are piles/berms longer than 1000 feet without a fire break?			
Are piles/berms loosely stacked to allow for natural draft?			
Have the piles/berms been cured for one year prior to ignition?			
How do you propose to extinguish the piles/berms if necessary? (ie. excessive smoke)			
Estimated time needed to complete the burning activities.			
Permit Approval Requested Length:		<input type="checkbox"/>	1 Year
		<input type="checkbox"/>	Multi-Year
<p>If a multi-year permit approval is requested, indicate which portions of the projects will be burned during each of the following years. Multi-Year permits will require a renewal application each year and are subject to the same fee.</p> <p>Attach a map as necessary to further indicate where/when burning will occur.</p>			

Indicate the type of vegetation to be burned (please check):			
	1 = Broadcast, forested, not piled, black spruce, shrub		5 = Hand piled slash
	2 = Broadcast, forested, not piled, white spruce		6 = Grassland / crop field
	3 = Range/tundra		7 = Other (explain below)
	4 = Machine piled slash		
Describe ignition techniques to be used:			
Note: DEC will calculate the emissions from this burn from the information included in the application.			

3. OTHER DISPOSAL OPTIONS

Identify alternative disposal options for material burned (such as marketing timber) and explain why they were not used. *An evaluation of alternatives to open burning must demonstrate that open burning is technologically economically, and environmentally the best alternative.*

List any alternatives to burning that have been done to the burn units prior to ignition.

4. SENSITIVE FEATURES

***Sensitive Features** include population centers such as communities, cities, towns, hospitals, health clinics, nursing homes, schools (in session), camp grounds, numbered Alaska highways and roads, airports, and Class I Areas, nonattainment areas, where smoke and air pollutants can adversely affect public health, safety, and welfare.*

Include a map of the proposed burn area.

- a. Indicate multiple burn sites (if any) within the proposed burn area;
- b. List sensitive features as described above that may be adversely affected by low level smoke and distance of those areas from proposed burn area(s);
- c. List sensitive features that may be adversely affected by long range transport of smoke and distance of those areas from proposed burn area(s).

How many maps are attached?

5. SMOKE MANAGEMENT

DEC's primary goal is to manage smoke to mitigate impacts on public health and visibility. Depending upon the potential for smoke incursions, special mitigation procedures may be required. The State of Alaska uses the following chart from Montana to relate visibility, as impacted by smoke, with air quality concentrations:

<http://deq.mt.gov/Air/CurrentAQ/visibilityranges> If you have questions while completing the Smoke Management portion of the application, please contact DEC for assistance.

Out of each group of 3 or 4 statements relating to smoke management issues, please check the one that most accurately describes your land clearing open burn:

☐☐

The project will only produce smoke for less than 1 day. No smoke related impacts to remote residences, roads, or other facilities.

☐☐

The project will produce smoke for 1 - 3 days or the smoke will be barely visible to the public. Minor or no smoke related impacts to isolated residences, remote roads or other facilities.

☐

The project will produce smoke visible to the public over 4 - 7 days. Vistas, roads, and some residences may experience short-term decreases in visibility.

☐

The smoke will be readily visible to the public and last more than 7 days. Vistas, roads, and some residences may experience longer-term decreases in visibility or significant decreases in visibility over the short-term. Smoke may affect smoke sensitive areas.

☐

Smoke will not extend into local communities or travel aloft to distant communities. Little impact expected on public health from smoke.

☐

Smoke will be around the public with potential impact to sensitive individuals who may need to take action to protect themselves.

☐☐

Smoke will impact communities in the vicinity of the fire or in the distance - the public will be impacted by smoke from this fire. Sensitive people and some healthy individuals may be required to take precautionary actions or need medical attention.

☐

☐

No special operational precautions required to protect public health.

☐

Consideration of operational actions will need to be undertaken to ensure protection of potentially impacted public.

Action will be required to protect public health; air quality monitoring will be necessary.

No operational difficulties (wind direction, weather)

are expected. Burn window(s) may be reduced by

weather / dispersion conditions.

Burn window opportunities are limited by weather / dispersion conditions. Accelerated mop up may be planned to reduce smoke impacts.

☐

I do not know what smoke impacts my fire will cause, please provide assistance.

6. MITIGATION:

If any safety hazard is present, or if requested by the authority of a Sensitive Feature, you must mitigate impacts through steps that are technologically feasible and economically and environmentally reasonable. Failure to have an effective mitigation measure may, in some cases, result in the application not being approved.

Indicate how authorities in control of Sensitive Features will be contacted if air quality degrades (visibility may be used as an indicator of air quality). Provide a contingency plan for smoke intrusion into Sensitive Feature areas. Indicate how you will notify Authorities having control over Sensitive Features identified above if visibility is expected to be decreased to less than three miles for an hour.

What mitigation practices / contingency plans are proposed to help keep the smoke from affecting Sensitive Features near to the burn site?

Is the burn expected to be large enough (>1000 acres) or hot enough to create a smoke plume that is transported to upper level air currents?

Yes

No

If yes, what mitigation practices / contingency plans are proposed to help keep the smoke from affecting Sensitive Features far from the burn site?

7. PUBLIC NOTICE

The Responsible Individual's local contact phone number should be publicized. The public must be notified at least three days prior to the anticipated open burn through the local news media, the local Post Office, or by individual communication (written documentation is best).

Indicate how the public will be informed prior to, during, and after the burning. How will you notify persons in control of the sensitive features identified on your map of your anticipated burn?

If burning is to occur within a non-urban area, list neighbors within a one-mile radius of the burn area. Use additional sheets if necessary.

Name:		Name:	
Address:		Address:	
Telephone:		Telephone:	
Name:		Name:	
Address:		Address:	
Telephone:		Telephone:	

Indicate how you will coordinate with other concerned agencies, including the Responsible Authorities of sensitive features identified above (such as the FAA, State Troopers, military, fire department, adjacent land managers, etc.) Include a list of telephone numbers or email addresses of agencies you will contact prior to

--

Indicate how you will coordinate with DEC Air Quality. At a minimum, the DEC Meteorologist must be notified one week prior to anticipated project ignition (907-269-7676). If your application is approved, a weather conference call should be scheduled for 24 - 96 hours prior to the actual burn.

--

Attach a copy of your approval for the DNR - Forestry Division Open Burn Permit for your planned activity, or explain below why a DNR Burn Permit is not required.

--

8. METEOROLOGICAL / WEATHER FORECASTING

The Division's meteorologist is responsible for ensuring, from the Department's standpoint, that smoke from a land clearing / agricultural burn does not adversely impact the public. To allow their participation in the burn decision making process, please ensure that this application is completed and submitted at least 3 weeks prior to a scheduled burn so they can participate in pre-burn planning events several days prior to ignition.

Indicate how weather forecasts will be obtained and used to prevent smoke impacts. Identify how the local and spot weather forecast will be obtained prior to ignition of the open burn (for example, contacting the National

--

Weather Service). *Parameters that should be obtained are the predicted visibility, dispersion conditions, transport and local area wind direction, and wind speed.*

Indicate how weather changes will be monitored.

Explain what you will do if a wind shift or other weather change begins to create an adverse smoke impact on Sensitive Features previously identified.

Indicate what will be done to ensure smoke disperses as forecast. Note: If a test fire fails to indicate that acceptable smoke dispersion will occur, no more fires are to be ignited.

Indicate proposed techniques to be used to enhance the active fire phase and reduce the smoldering phase. Consider employing emission reduction techniques before, during and after the fire. Indicate what techniques are feasible for you to accomplish.

DEC may require monitoring for certain burns. Such burns are typically large-scale or very close to sensitive features. The monitoring requirements, if any, will be addressed within the approval process. If monitoring is required, DEC may supply monitoring equipment and personnel. The applicant acknowledges that time and materials will be charged for DEC services. _____ Yes

If applicable, identify how the effect of the fire on air quality at Sensitive Features will be monitored.

If any safety hazard is present, or if requested by the persons in control of a sensitive area, you must mitigate the smoke impact of the fire as quickly as possible. You will be held legally responsible for any accidents or adverse health effects that occur because of your open burn.

Certification: (If signing as an Authorized Agent, please submit a copy of your authority to do so.)

Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete.

Landowner Signature

Date
Date

Fire Manager Signature (if applicable)

Printed Name of Landowner
applicable)

Printed Name of Fire Manager (if

As of September 26, 2015, the fee for review of and routine compliance services for a request for Open Burning Approval is \$230. With each burn application please submit a \$230 administrative fee payable to the State of Alaska, DEC. If the department determines that a smoke incursion is likely as per 18 AAC 50.400(g), any additional costs will be billed on an hourly basis in accordance with 18 AAC 50.400(h). The applicant will be notified that DEC will charge an hourly administrative fee and direct costs for approval processing and administration. DEC will prepare and send a monthly invoice itemizing fees and direct costs to the applicant.

Send each open burn application and check to:

ADEC Air Permits Program
Anchorage Compliance Office Supervisor
Open Burn Request
555 Cordova Street
Anchorage, AK 99501

Your approval may be issued within 30 days. If approved, notification and burn summary requirements will be outlined in your letter of approval.

A copy of the open burning guidelines may be obtained through our website: <https://dec.alaska.gov/air/air-permit/open-burn-inf>

This approval does not constitute a permit or approval from any agencies other than ADEC Division of Air Quality; other agency permits or approvals may be necessary.

DNR Large Scale Burn Permit Application (Draft)

**State of Alaska
Division of Forestry
Large Scale Burn
Permit**

Permit Number:



The permittee is authorized to burn _____(project type)

at : _____(legal, physical, street address)

_____(Lat/Long);

subject to the following terms _____

and conditions (attach additional pages as needed):

Size, configuration, and materials

- ☐ _____pile(s) of organic materials only not to exceed _____feet in diameter and _____feet in height.
- ☐ _____acre(s) of un-matted grass less than _____inches in height.
- ☐

Containment/fuel breaks

- ☐ Construct a fuel break a minimum of _____times the height of the pile by removing all vegetation and flammable material from around all sides of the pile and clearing down to mineral soil.
- ☐ Utilize man-made fuel breaks (e.g. roads, driveways, trails) as primary containment lines and burn into the wind.
- ☐ Utilize black/wet line (minimum _____feet wide) to divide field into _____acre sections or less and burn one section at a time.
- ☐

Ignition and smoke management

- ☐ Do not ignite before _____ a.m./p.m.
- ☐ Do not burn in winds greater than mph.
- ☐ Do not burn if smoke will impact neighboring properties or businesses.
- ☐

Resources

- ☐ A minimum of _____ persons with hand tools must be on scene while actively burning
- ☐ A minimum of _____ persons with hand tools must be on scene until the fire is fully extinguished and cold to the touch
- ☐ A minimum of _____ gallons of pressurized water and adequate hose to reach around all sides of the fire is required while burning.
- ☐ Heavy equipment (excavator/dozer) must be on scene while burning.
- ☐

Monitoring and patrolling

- ☐ Actively monitor and patrol perimeter and adjacent wildlands for spotting or escapement until the fire is fully extinguished and cold to the touch.
- ☐ Monitor winds and cease burning if windspeed exceeds _____ mph.
- ☐ Monitor smoke and cease burning if smoke impacts neighboring properties or if ash falls outside of fuel break or containment lines.
- ☐

Every day you burn and prior to burning you are required to:

- ☐ Call the _____ Area Forestry Burn Permit Advisory Line at (907) _____ for a recorded message announcing whether or not burning is allowed for the day.
- ☐ Call _____ Area Forestry Dispatch at (907) _____ and notify them of your intent to burn.
- ☐ Call _____ at (907) _____ and notify them of your intent to burn.

Additional Permit Requirements or Conditions

- ☐ This permit is issued by the Alaska Division of Forestry as authorized by AS 41.15.010 (Protection from wildland fire), 41.15.050 (Fire season) and 41.15.060 (Permits).
- ☐ This burn permit may be denied, suspended or revoked by an authorized employee of the State of Alaska Division of Forestry. 11 AAC 95.430 (Denial, suspension, or revocation of permit).
- ☐ The permittee shall have this permit signed, and in their possession while burning and shall display it upon request. 11 AAC 95.412 (Permit requirements).
- ☐ Large scale burning may be subject to other Federal, State or local laws and regulations that are more restrictive. The permittee is responsible for determine and complying with any Federal, State or local laws and regulations that apply.
- ☐ Open burning of woody debris material by farmers and developers requires written DEC approval prior to lighting if the intent is to burn, or clear and burn, 40 acres or more during a year
18 AAC 50.065 (g) (Open Burning). It is the responsibility of the Permittee to contact the State of Alaska Department, Department of Environmental Conservation, Air Quality Division to determine if a permit is required.

Non-compliance with this permit may lead to a fine or criminal prosecution. This permit does not relieve the permittee from civil or criminal liability for damages resulting from an unpermitted burn or escaped fire.

Permit Classification: ☐ **Agricultural** ☐ **Contractor** ☐
Miscellaneous

Effective Start Date and Expiration Date of Permit :

Permittee signature:_____ **Printed name**

Date

Issuing Agent: _____ **Title**

Date

Appendix D Emission Reduction Techniques

Emission Reduction Techniques

The DEC encourages land managers to use techniques that increase combustion efficiency and reduce the smoldering stage of burning, such as fans (when burning slash), mass ignition, accelerated mop-up, and other methods.

To maximize the effective use of fire within the emission levels allowed, it is necessary to employ improved burning techniques. The science of predicting the amount of emissions has improved within the last few years thanks to research done by the USFS Pacific Northwest Research Station, but more work needs to be done for Alaska-specific conditions.

Computer models allow land managers to analyze proposed burns and prepare burning prescriptions that will produce minimum emissions on each acre to be treated. Various site factors and burning technique scenarios can be tested in the models, and estimates of emissions that each scenario would produce can be calculated. This capability will allow land managers to treat maximum acreage with minimum emission production.

The following smoke management and emission reduction techniques are considered best management practices:

1. Reducing the biomass by use of techniques such as yarding or consolidation of merchandisable material, multi-product timber sales, or public firewood access, when economically feasible. When allowing public firewood access, the public must also be informed of the adverse impact of using green or wet wood as fuel;
2. Burning in seasons characterized by meteorological conditions that allow for good smoke dispersion;
3. 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 on activities conducted by local communities and land users;
6. Burning only those fuels essential to meet resource management objectives;
7. Minimizing duff consumption and smoldering through fuel moisture considerations;
8. Burning piles when other burns are not feasible, such as when snow or rain is present;
9. Implementing maintenance burning in a periodic rotation mimicking natural fire cycles to reduce excessive fuel accumulations and subsequent excessive smoke production through smoldering or wildfire; and
10. Managing smoke impacts as follows:
 - a. Limiting smoke impacts to roads, highways, and airports

to the amounts, frequencies, and durations consistent with any guidance provided by highway and airport personnel;

- b. Using appropriate signing if smoke will impact any point of public access, i.e. highways, dirt roads, trails, campgrounds, etc.;
- c. Notifying potential impacted sensitive receptors; and
- d. Determining nighttime impacts and taking appropriate precautions.

Appendix E

Smoke Management Contingency Plan

Smoke Management Contingency Plan

Each Burn Plan submitted to DEC for written approval should contain a contingency plan for actions to be taken if smoke impacts sensitive features in the area. The format is entirely up to the Responsible Authority, but appropriate short-term (less than 24-hour) contingency actions should, among other things, include:

1. identification and location of smoke sensitive features;
2. smoke sensitive features distance from burn area, potential for problems;
3. notifying the affected public of elevated pollutant concentrations;
4. list of emergency contact numbers in case of smoke intrusions;
5. suggesting actions to be taken by sensitive persons to minimize their exposure (e.g., remain indoors, avoid vigorous activity);
6. providing clean-air facilities for sensitive persons or means of evacuation if needed;
7. halting ignitions of any new open burning that could impact the same area;
8. identification of fuel loading, consumption, and potential rates of emission production over time (so that you can anticipate when the highest emission production will occur).

Example text follows (for guidance purposes, these are not necessarily required items):

“Smoke sensitive areas are primarily the communities of Tok, Chicken, and Northway. Potential smoke related problems include effects on individuals with respiratory problems and reduced visibility for aircraft at airstrips. The potential for smoke related problems are considered minimal due to the distances between these communities and the burn (from 25 to 50 miles away).”

The following measures will be taken to reduce the potential for smoke related problems:

1. firing will not be conducted when fog or inversion potential exists; and
2. notification will be given to DEC, Alaska State Troopers in Tok, the FAA FlightServices in Northway, the Boundary and Alaskan Ports of Entry, and media contacts.

Table of Fuel loading and consumption information

Size class (inches dia)	surface fuel tons/acre	% consumption	duff fuel tons/acre	consumption tons/acre
0-0.25	0.2	40.0		0.08
0.25-1.0	0.3	12.5		0.04
1.00-3.0	0.5	7.5		0.04
>3	3.0	2.5		0.07
duff loading	(estimate)	30.0	10	3.0
TOTAL				3.23

Appendix F

Alternatives to Burning

Alternatives to Burning

The term “alternatives” refers to mechanical, biological, or chemical treatment methods of fuel reduction that do not include burning, such as chipping, grinding, logging, and mechanical/hand thinning with removal. The need for using prescribed fire falls into three broad categories: reduction of hazardous fuels, ecological effects, and ecological restoration. In order to be considered a “non-burning alternative” the treatment must mimic at least some effect of a prescribed fire.

Land managers should consider the availability and feasibility of alternatives to burning in lieu of burning. This is particularly true where there is likelihood that burning in or near residential areas may cause an exceedance of the NAAQS, and/or when alternatives are available, feasible, economical, and when the use of the alternative will not cause other unacceptable environmental or human health effects. When alternatives to burning are used, land managers should report this to DEC so that the effort can be tracked as an emission reduction technique.

Examples of alternative measures include:

1. **Mechanical removal.** This category includes logging, onsite chipping, offsite use of brush or firewood, or treatment of unmerchantable material such that slash burning is not needed.
2. **Chemical treatments.**
3. **Land use change.** According to the NWFCG Smoke Management Guide, changing wildland to another land use category may result in elimination of the need to burn in a prescriptive manner. Conversion of a wildland site to an urbanized use is the example that they gave (view website at: <http://www.nwfcg.gov/pms/pubs/large.html#SmokeManagement>)
4. **Reduction of fuel consumed in a prescribed burn.** This is achieved when fuels are at or above the moisture of extinction and therefore are unavailable for combustion. This may not result in a real reduction in emissions, and it may significantly increase smoldering. But if it is the intention of the land manager to leave the unburned fuels for biological decomposition (or for other reasons), then this method does qualify as an “alternative.”.

Appendix G

Air Quality Monitors

Air Quality Monitors

There are several types of air monitors that can be used to assess ambient levels of particulate matter. Ambient monitoring determines when the public is being impacted by smoke and is a tool to help the burn agency and DEC take necessary steps to protect the public.

FRM or “Federal Reference Method” is a monitor that has been set up and operated in accordance with the procedures set out in the Code of Federal Regulations (CFR). Site placement is very important in determining whether it is a FRM monitor or not. These monitors are usually manually operated samplers with "paper" filters and a vacuum air flow which requires electrical power. While these monitors do provide official data, it often takes several days to process the filter. This type of monitor setup also includes various types, Hi-Vol (PM₁₀), and R&P PM_{2.5} Partisol.

FEM or “Federal Equivalent Method” monitors are comprised of monitors and procedures which were approved after the FRM procedure was promulgated. Some of these monitors are filter-based, manual samplers and some are continuous samplers, like the "real-time" monitors. The real-time monitors are more costly than the filter-based systems, but they do have continuous read-outs which give concentrations in “real time.” Many of these monitors are portable; some are hand-held and operate on battery packs, so they do not require electrical sources. This type of monitor includes beta gauges, TEOMS, etc.

SLAMS or “State and Local Air Monitoring Site” A fixed monitoring site which is part of the federal monitoring network, these are normally used to determine compliance with the national particulate standard. An example would be one of the monitors in Anchorage.

SPM or “Special Purpose Monitors” may or may not be FRMs. By virtue of their being SPMs, the data could be used to assist, track, and evaluate a burn without “counting against” the land manager. Land managers should be encouraged to use SPMs to collect data. SPMs are usually used to assess pollutant levels and to determine whether a more long-term monitor is needed. They are usually set-up temporarily. Most monitors have been tested against a FRM unit. The assumption is that the data provide a good approximation of what the ambient particulate levels are. An example of each type of sampler would be the Anderson Hi-Vol manual PM₁₀ sampler (FRM) and R&P PM_{2.5} Partisol (FRM), the Graseby Beta Gauge and R&P TEOMS (two FEM continuous PM_{10/2.5} monitors), and the nephelometer (a continuous, special purpose, fine-particulate monitor).

IMPROVE or “Interagency Monitoring of Protected Visual Environments.” Refers to the monitoring network used to assess air quality in Class I and Class II areas. These units monitor particulates, total carbon, and other components. IMPROVE consists of air quality data from Class I areas that include national parks and wilderness areas where visibility is deemed an important attribute. This monitoring program is an interagency effort with the U.S. Environmental Protection Agency (EPA) and the U.S. Department of the Interior (DOI), including the U.S. Forest Service (USFS), U.S. Fish and Wildlife Service (FWS), and the Bureau of Land Management (BLM). The National Park Service (NPS) provides monitoring and maintains the database to determine spatial and temporal trends in visibility in the NPS parks and wilderness areas and determine causes for visibility degradation. The IMPROVE fine particle network collects PM_{2.5} and PM₁₀ samples over a twenty four hour period every Monday and Friday using IMPROVE

samplers. The network consists of over 110 monitoring sites, located in Class I ("Clean Air") areas, and has been in operation since 3/88. The PM samples are analyzed for PM_{2.5} mass and its elemental constituents, organics, ions, light absorption, and PM₁₀ mass. The data set contains the concentrations, minimum detection limit, error, and data quality flags.

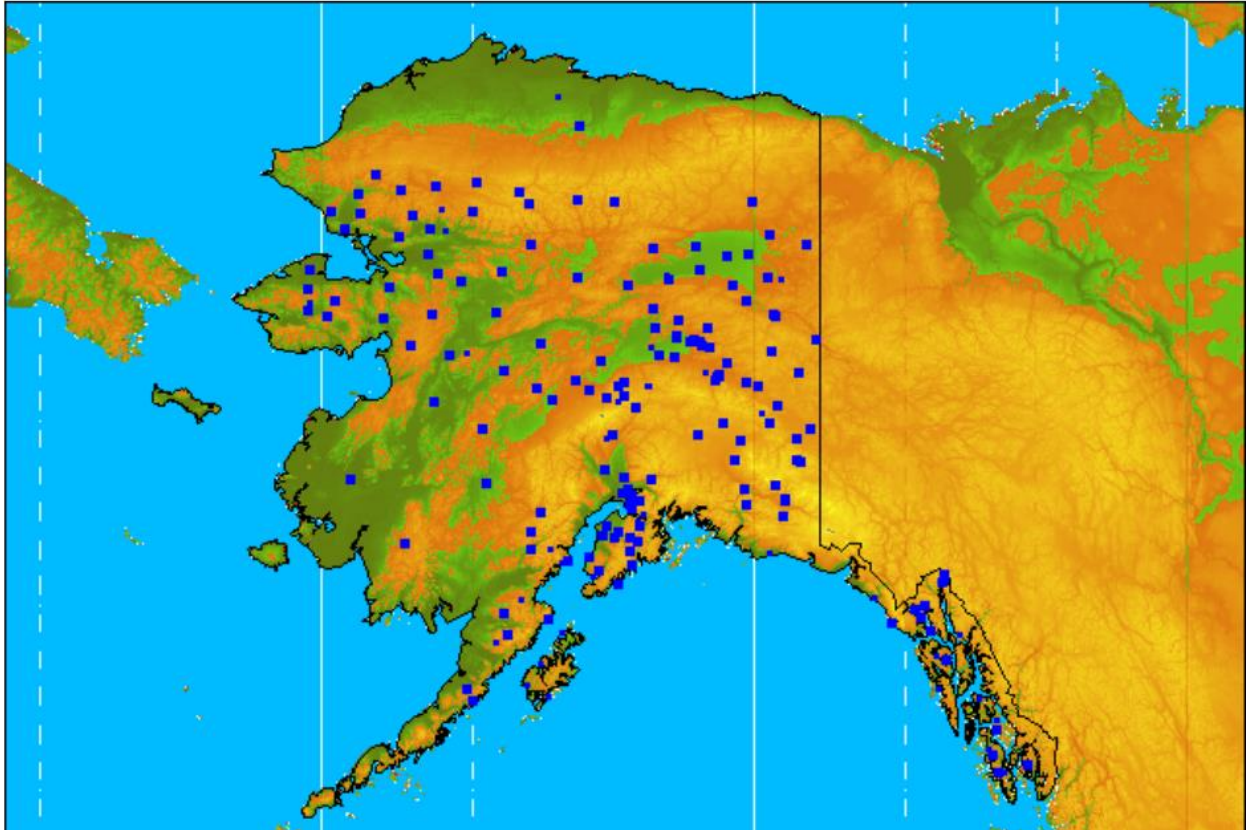
Visual: refers to the evaluation of smoke concentration based on visibility. Experienced personnel would be stationed along roadways, in communities, etc. to evaluate visibility impacts due to smoke. For example, visibility of $\frac{3}{4}$ mile or less can be indicative of very unhealthy air quality due to hazardous PM_{2.5} concentrations, whereas visibility of 3 to 5 miles indicates concentrations that can be unhealthy for sensitive individuals. This procedure, when done properly, could give somewhat valid information on smoke concentrations in an airshed. A good "rule of thumb" tabulation on this method is located in the Smoke Management Guide for Prescribed and Wildland Fire, 2001 edition, p.31. (www.nwcg.gov)

Smoke impacts at various receptors: a certain number of valid complaints from community residents may be evaluated and considered for taking mitigation action on a prescribed burn. Valid complaints from local safety, government, fire department or other authority will be given priority consideration.

Appendix H

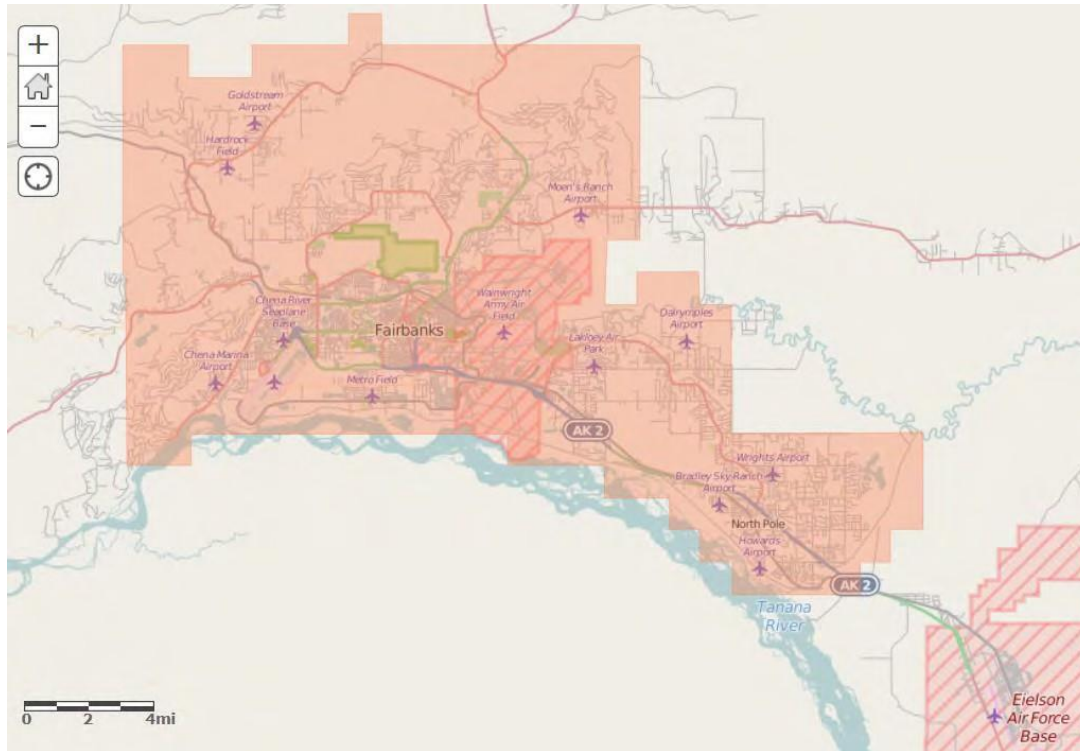
Maps

Fire Weather Monitoring Stations



Archived Remote Automated Weather Station
(RAWS) data available at
<http://www.wrcc.dri.edu/wraws/>

Fairbanks PM_{2.5} Nonattainment Area

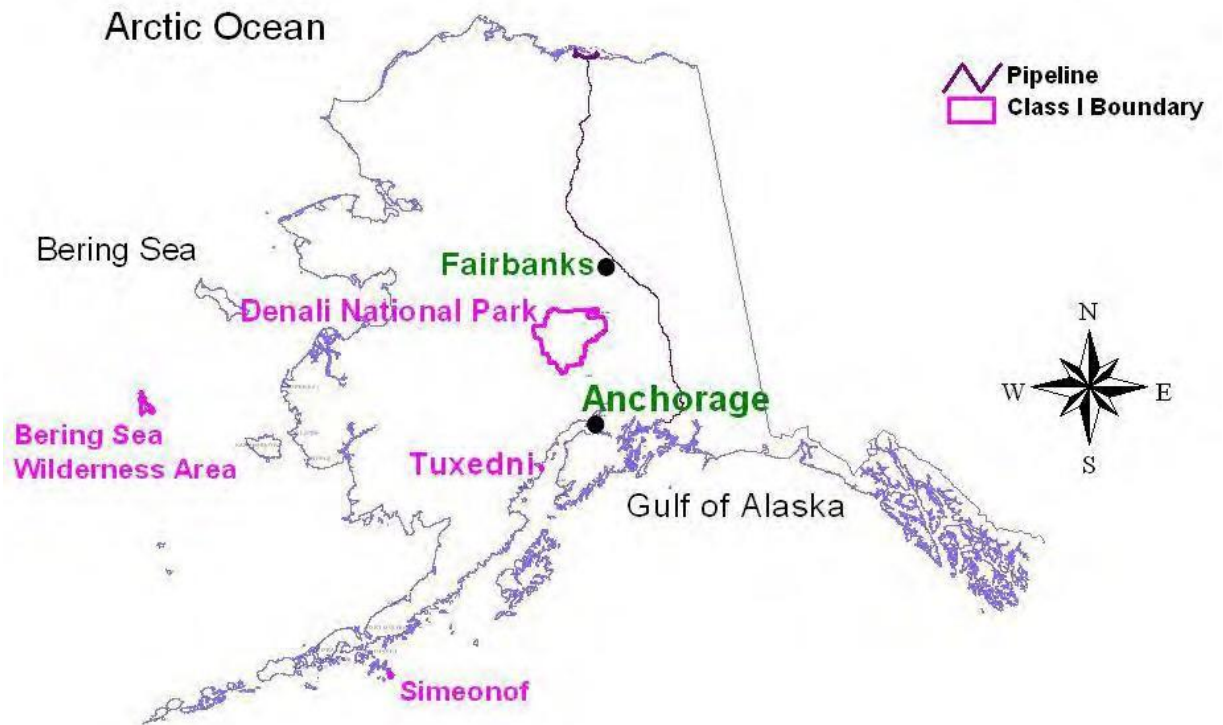


An online GIS version of this map is accessible from DEC's web map gallery:
<http://dec.alaska.gov/das/GIS/apps.htm>.

Alaska Visibility Protection Area (VPA)

A full description of the Alaska Visibility Protection Area (VPA) can be found in the Alaska Regional Haze Plan, Chapter K.13.H (Long Term Strategy) in sub-chapter 2.A. Regional Haze Visibility Protection Area.

Alaska's Class I Areas



Appendix I

Example Air Quality Advisory

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Air Quality AIR QUALITY ADVISORY
South Central Alaska #2014-F3
Thursday May 22, 2014 2014

LOCATION(S) IMPACTED: South Central Alaska. Fires near Tyonek and Soldotna are impacting air quality over a large portion of south-central Alaska to include the Mat-Su Valley, Anchorage, the western Kenai Peninsula and Kodiak Island. The Mat-Su and Anchorage air quality offices have issued advisories for those areas. This advisory is for the Western Kenai Peninsula. All these advisories are available on the DEC website.

<http://dec.alaska.gov/Applications/Air/airtoolsweb/Advisories>

TIME/DATE OF UPDATE: Thursday May 22, 2014 2:00 PM.

VALID TIME: Thursday May 22, 2014 2:00 PM. to Tuesday May 27, 2014 4:00 PM

TIME/DATE OF THE NEXT REPORT: Friday May 23, 2014 4:00 PM

ADVISORY: Fires near Tyonek and Soldotna are impacting air quality on the Kenai Peninsula. Smoke from these fires has saturated the air over a large portion of South-central Alaska. Main population areas impacted are Kenai, Nikiski, Soldotna, Ninilchik, Kasilof, Seldovia, and Homer. Although a large area of smoke is over Kodiak Island, concentrations are more diffuse in that area. Conditions are expected to continue through the weekend. Air Quality throughout the area will vary between **GOOD** and **VERY UNHEALTHY** depending on wind patterns and fire behavior.

Be aware that areas immediately downwind of any fire will experience **HAZARDOUS** levels of smoke. Generally, worse conditions occur overnight and during the early morning hours, as the atmosphere cools and brings smoke to the surface. During the day, surface heating will mix smoke and carry it upwards, temporarily improving air quality.

SMOKE AND PUBLIC IMPACT: This is an area forecast, and as such is a general forecast for portions of South Central Alaska. Smoke intensity will vary depending on precise location and local wind flow patterns. Smoke concentrations will be such that they could impact public health at times. It is advised that travelers check local weather as smoke conditions may vary considerably from one locality to the next. The most recent weather observations may be found on National Weather Service's homepage at <http://pafc.arh.noaa.gov/obs.php>.

In smoke impacted areas, DEC advises people with respiratory or heart disease, the elderly and children should avoid prolonged exertion; everyone else should

limit prolonged exertion. See the table below for more guidance on the Air Quality Index categories and Cautionary Statements.

The following table contains the cautionary statements for the Air Quality for Particle Pollution.

Air Quality Category	Cautionary Statements
Good	None
Moderate	Unusually sensitive people should consider reducing prolonged or heavy exertion.
Unhealthy for Sensitive Groups	People with heart or lung disease, the elderly and children should reduce prolonged or heavy exertion.
Unhealthy	People with respiratory or heart disease, the elderly and children should avoid prolonged exertion; everyone else should limit prolonged exertion
Very Unhealthy	People with respiratory or heart disease, the elderly and children should avoid any outdoor activity; everyone else should avoid prolonged exertion
Hazardous	Everyone should avoid any outdoor exertion; people with respiratory or heart disease, the elderly and children should remain indoors

When air quality data is unavailable, the following **Air Quality Smoke Reference Guide** may be used to estimate air quality levels and potential health impacts:

Visibility	Air Quality
10+ miles	Good
6 - 9 miles	Moderate
3 - 5 miles	Unhealthy for sensitive groups
1.5 - 2.5 miles	Unhealthy
0.9 - 1.4 miles	Very Unhealthy
0.8 miles or less	Hazardous

FOR MORE INFORMATION: For information on this advisory, contact Mark Smith with the Division of Air Quality at 907-269-7676.

Criteria to issue an Air Quality Alert

18 AAC 50.245. Air quality episodes and advisories for air pollutants other than PM-2.5.

(a) The department or a local air quality control program may declare an air quality episode and prescribe and publicize curtailment action if the concentration of an air pollutant in the ambient air has reached, or is likely in the immediate future to reach, any of the concentrations established in Table 6 in this subsection.

**Table 6.
Concentrations Triggering an Air Quality Episode for Air Pollutants Other Than PM-2.5**

Episode Type	Air Pollutant	Concentration in micrograms per cubic meter {and in ppm where applicable}
Air Alert	Sulfur dioxide	365 (24-hour average) {0.14 ppm}
	* PM _{2.5}	40 (24-hr average)
	PM ₁₀	150 (24-hour average)
	PM ₁₀ from wood burning (wood smoke control areas)	92 (24-hour average)
	Carbon monoxide	10,000 (8-hour average) {8.7 ppm}
Air Warning	Sulfur dioxide	800 (24-hour average) {0.31 ppm}
	* PM _{2.5}	150 (24-hr average)
	PM ₁₀	350 (24-hour average)
	Carbon monoxide	17,000 (8-hour average) {15 ppm}
Air Emergency	Sulfur dioxide	1,600 (24-hour average) {0.61 ppm}
	* PM _{2.5}	250 (24-hr average)
	PM ₁₀	420 (24-hour average)
	PM ₁₀ from wood burning (wood smoke control areas)	During an air alert, a concentration measured or predicted to exceed 92 (24-hour average), and to continue to increase beyond the concentration that triggered the air alert
	Carbon monoxide	34,000 (8-hour average) {30 ppm}

(b) The department or a local air quality control program will declare an air

quality advisory if, in its judgment, air quality or atmospheric dispersion conditions exist that might threaten public health.

(c) If the department or a local air quality control program declares an air quality advisory under (b) of this section, the department or a local air quality control program will

(1) request voluntary emission curtailments from any person issued a permit under this chapter whose stationary source's emissions might impact the area subject to the advisory; and

(2) publicize actions to be taken to protect public health.

(d) Nothing in this section alters a local government's powers or obligations under a local air quality control program established under AS 46.14.400 and other local laws, as applicable. (Eff. 1/18/97, Register 141; am 10/1/2004, Register 171; am 2/28/2015, Register 213)

18 AAC 50.246. Air quality episodes and advisories for PM-2.5. (a) The department or a local air quality control program may declare an air quality episode and prescribe and publicize the actions to be taken if the concentrations of PM-2.5 in the ambient air has reached, or is likely in the immediate future to reach, any of the concentrations established in Table 6a in this subsection. The episode thresholds and actions prescribed for any area that has a local air quality plan included in the *State Air Quality Control Plan* adopted by reference in 18 AAC 50.030 must be consistent with the emergency episode provisions included in that plan.

Table 6a
Concentrations Triggering an Air Quality Episode for PM-2.5

Episode Type	Air Pollutant	Concentration in micrograms per cubic meter
Air Alert	PM _{2.5}	35.5 (24-hour average)
Air Warning	PM _{2.5}	55.5 (24-hour average)
Air Emergency	PM _{2.5}	150.5 (24-hour average)

(b) The department or a local air quality control program authorized by the department under AS 46.14.400 will declare a PM-2.5 air quality advisory if, in its judgment, PM-2.5 air quality or atmospheric dispersion conditions exist that might threaten public health.

(c) If the department or a local air quality control program declares a PM-2.5 air quality advisory under (b) of this section, the department or a local air quality control program will

(2) request voluntary emission curtailments from any person issued a permit under this chapter whose stationary source's emissions might impact the area subject to the advisory; and

(2) publicize actions to be taken to protect public health.

(d) Nothing in this section alters a local government's powers or obligations under a local air quality control program established under AS 46.14.400 and other local laws, as applicable. (Eff.2/28/2015, Register 213)