



bulkley valley - lakes district
airshed management society

COMMUNITY ACTION PLAN *for* CLEAN AIR

A five-year strategy

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FOREST HARVEST DEBRIS BURNING

For full report, see www.cleanairplan.ca

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Forest Harvest Debris Burning

6.1 Background

The forest industry is the largest employer in the **BVL D**, and provides numerous direct and indirect jobs and services. Through logging, residual debris (tree limbs and tops, rotten wood, etc) is created and this debris forms a fire and insect spread hazard. As a result the debris must be disposed of in a safe and practical manner. Due to the remote nature of many logged blocks, open burning of debris on-site is a frequently used technique for alleviating these hazards. Open burning of debris as it relates to forest harvest takes three general forms:

- Piling of debris into distinct piles and then subsequently burning those piles;
- Broadcast burning of debris where debris is burned "as is" on the ground as opposed to being piled into distinct piles, and
- "Fall and Burn" of individual/small groups of bark beetle infested trees.

6.2 Significance of Source to Ambient Air Quality

Although many logging blocks are located in remote areas, wind and **topography** can combine to move smoke (fine particulates) towards populated centers. For example, airflow patterns in mountainous areas may lead to cold air drainage into valley bottoms each night carrying some of the smoke and fine particulates from open burning with it. Typically, populated areas such as the communities along the Highway 16 corridor tend to be located in these valley bottoms, resulting in an increased potential for smoke from open burning to cause health impacts on area residents, aircraft navigation hazards and aesthetically undesirable views.

Pile Burning / Broadcast Burning: The majority of forest debris burning occurs during the fall and, to a lesser extent, spring seasons; and some winter burning occurs where concurrent bark beetle suppression is required. As a result, this burning is expected to have a greater contribution to both overall levels of **fine particulates** during fall and spring (and winter to a lesser extent) as well as having an increased potential to contribute to poor air quality episodes during those seasons. Although **venting** conditions typically improve in the spring and are best during mid-summer, the decision to burn debris must be balanced with the increased fire hazard associated with warmer months. Forest harvest debris disposal by open burning requires coordination of several factors including:

- moisture content of debris (ease of ignition/smoke output)
- forest moisture content (fire hazard)
- completion and timing of harvest (bark beetle emergence)
- weather factors (such as snow level)
- suitable venting conditions (for good **smoke dispersion**)

Typically, there is a three-month period in the Fall (one month each for Bulkey/Morice/Lakes localities) when these factors are optimally balanced, resulting in tens of thousands of piles of debris being burned in that short time period each year in the BVL D. The potential then exists that even on days when venting conditions are good for smoke dispersion, the **airshed** can be overloaded with too many piles being burnt on a given day, resulting in air quality impacts.

Fall and Burn of Bark Beetle Infested Trees: A widely used method of bark beetle control on scattered small infestations, or where logging is constrained (such as a steep hillside or in a park), involves hand falling individual infested trees, hand **piling** them and then burning them. Burning is a legal requirement as it kills the beetles residing in the bark and reduces the fire risk in the stand. Due to the small size and poor access constraints, MOE generally issues permits that allow these operators to burn on days of less than good venting conditions in moderate and low smoke sensitivity zones. Burning in high smoke sensitivity zones is typically not allowed on days when a '**burn ban**' has been issued.

6.3 Emission Reduction/Control Efforts to Date

Emission reduction/control efforts to date have occurred to manage the impact of smoke on local population centers by:

- reducing the amount of material burned
- reducing emissions of fine particulate when burning occurs
- optimizing when burning can occur

Reducing the amount of material burned: Historically, **broadcast burning** was considered the most effective method for creating plantable terrain and opening ground to planters for reforestation, as well as for controlling vegetation and creating warm soil for optimum growth of planted trees. Changes in regulatory environment, among other factors, has lead to a switch away from broadcast burning to other **site preparation treatments** that do not involve the complete burning of an area, and therefore much less **biomass** is burned.

Retention of debris through a site specific approval process (such as the **silviculture prescription**) to meet biodiversity or wildlife objectives has allowed some licensees to retain a portion of their debris piles, or to not pile certain areas. Additionally, new management objectives for retaining **coarse woody debris** (CWD) on-site has resulted in less debris needing to be burnt.

Reducing emissions of fine particulate (cleaner burning): Harvest methods have changed from **landing** to **roadside based** operations, with many smaller piles becoming concentrated along roadsides, as opposed to fewer large piles at the **landing**. Smaller piles 'breathe' better and result in less smoke production and shorter burn duration. With other factors being equal, such as utilization standards, the actual amount of debris burnt would be similar with either system.

There is a strong trend to reduce **emissions** from open burning, while still maintaining the practice. Industry operators and regulators alike continue to consider fire to be a valuable management tool.

6.4 Relevant Regulations and Community Plans

Regulations relating to this practice exist under both the Ministry of Forests (MOF) for fire and **insect hazard abatement** as well as under the Ministry of Water, Land and Air Protection (MOE) for **smoke hazard abatement** and include the:

- Forest and Range Practices Act (formerly the Forest Practices Code of British Columbia Act)
- Forest Fire Prevention and Suppression Regulation
- Environmental Management Act (formerly the Waste Management Act)
- Open Burning Smoke Control Regulation (OBSCR)
- Bulkley **Timber Supply Area** Burn Plan for Smoke Management
- Nadina Forest District Burn Management Plan

6.5 Community Consultation/Key Players

This chapter was largely written by selected members of the Resource Management Burning Subcommittee of the Regional Working Group (for the BVL D Airshed Management Plan). Membership on this subcommittee is comprised of ecologists, biologists, air quality scientists, foresters, and woodland operators. Representatives from the regional provincial government offices of MOE and MOF together with representatives from large industry, including CanFor , Houston Forest Products, Babine Forest Products, Pacific Inland Resources, and Decker Lake Forest Products, woodlots and charter flight operators participated in meetings to develop the material included in this chapter. The purpose of these strategies is to reduce emissions from forest harvest debris burning while protecting the economic interests and safety of stakeholders. Further discussion with stakeholders will be ongoing through the planning process.

6.6 Goals, Indicators and Strategies

The overall goals for managing this source of fine particulate are:

- To reduce or eliminate air quality episodes attributable to forest harvest debris burning.
- To provide a proactive response when air quality is deteriorating in the valley.
- To reduce smoke impact on light aircraft navigation

A summary of indicators and strategies for these goals is provided in Table 6.1. The strategies listed are intended to result in reduced emissions of fine particulate from forest harvesting and agricultural burning as well as to reduce impacts contributions to ambient air quality from this source.

Table 6-1 Goals, Indicators, Strategies

Goals	Indicators	Strategies	Status
To reduce or eliminate air quality episodes attributable to forest harvest debris burning, and reduce impacts from forest harvest debris burning at any time.	Percentage of Potential Episode Days (PED) where PM10 24 hour averages are greater than 25 µg/m ³ during the forest harvest debris burning season.	Maintain MOE's educational, coordination and enforcement role with emitters. (see Table 6-2) Continued operation of the Resource Management Burning Regional Working Group subcommittee. (see Table 6-2) Continually explore alternatives that directly target reductions in debris production or smoke emissions. (see Table 6-2)	On-going Meet annually at beginning of September before each burning season to review this chapter of the Clean Air Plan and effectiveness of strategies. Invites are sent out 4 weeks in advance. Last meeting: September 26/05
To provide a proactive response when air quality is deteriorating in the valley.	Percentage of Potential Episode Days (PED) where PM10 24 hour averages are greater than 25 µg/m ³ during the forest harvesting and agricultural burning season.	No new pile burning or broadcast burns allowed within any smoke management zone, regardless of current venting indices, as indicated by MOE-issued burn bans . Applicable to all Timber Supply Areas within the airshed.	On-going
To reduce smoke impact on light aircraft navigation	Complaints from charter companies.	As per applicable burn management plans, ensure the maximum number of piles per day being burnt is not exceeded. Continue and improve two-way communication on burn schedules and flight ways (routes). Specifically, flight routes must be pre-identified on a map and given to permit holders, and both local charter companies are to be notified the day before of burning to be conducted along these routes.	On-going No complaints from charter companies received in 2005.

Table 6-2 Implementation Plan

Detailed Strategy Description	Feasibility	Monitoring & Evaluation	Status
<p>Education</p> <p>Develop a centralized information source that burn operators can use to ensure burning is conducted properly and meets legal requirements related to smoke management. Information would include:</p> <ul style="list-style-type: none"> • Venting information • How to conduct a proper burn • Legal requirements and their applicability to operations • Benefits of burning well piled, seasoned debris. <p>Work with burn operators to improve burn techniques through timing and duration of burning based on local weather patterns and weather/venting index forecasts.</p>	<p>Elements are in place today.</p> <p>The availability of time and resources of the central agency (MOE) will be a factor.</p>	<p>Add to agenda for Subcommittee during annual meetings.</p>	<p>Dedicated page on cleanairplan.ca built in October 2005. Link is on homepage.</p> <p>Information added to site as it becomes available.</p> <p>Annual Burn Operators forum held each September and communication is ongoing between AMS, MOE and operators as needed.</p>
<p>Coordination of burning operations to take advantage of available venting and to avoid overloading the airshed (burning too many piles in a given day).</p> <p>Promote and refine the new Custom 3 day venting index forecasting service provided by MOE. Emitters to submit a list of areas where burning is to occur, including an estimate of how much is going to be burned, prior to ignition.</p> <p>Use expert advice to minimize impacts from burning operations (i.e. A qualified meteorologist, approved by the Regional Waste Manager, Skeena Region of MOE).</p> <p>Maintain awareness of overlap with other plans as well as for smoke sensitivity zone and burn ban boundaries.</p> <p>Through a combined effort of the Subcommittee and MOE and using District Level Burn Plans, develop a regional burn schedule setting the maximum allowable amount of burning to occur per geographical area prior to burning and circulate in & outside Skeena Region</p>	<p>The availability of time and resources of the central agency (MOE) will be a factor. Strengthening the Subcommittee and proving the value of and funding a paid coordinator will be critical.</p>	<p>MOE to produce report on achievements of forecasting service.</p> <p>Add to agenda for Subcommittee.</p>	<p>CVI Forecast Service continues to be offered. At 2005 Burn Operators' Forum, each operator indicated location of their burn piles on a map.</p> <p>MOE is coordinating schedule of burns and provides annual update on effectiveness of strategies at the Burn Operators Forum.</p>

Detailed Strategy Description	Feasibility	Monitoring & Evaluation	Status
<p>Enforcement of applicable regulations and burn plans</p> <p>Continue and improve on MOE air quality and venting condition monitoring in the plan area.</p> <p>MOE to continue issuances of Advisories and Burn Bans.</p> <p>Continue with MOE Compliance Promotion Program, with site visits to emitters to provide education and enforcement.</p> <p>Continue to produce annual compliance and enforcement reports.</p> <p>Emitters to maintain compliance with burn management plans and OBSCR.</p>	<p>Air Quality monitoring is current mandate of MOE.</p> <p>Compliance and Enforcement is current mandate of MOE.</p>	<p>Publicize compliance promotion and findings & provide route for public comment.</p>	<p>Distribution list of AQ Advisories is expanded upon request. Service is provided 7 days/week.</p> <p>Update on compliance reports provided at Burn Operator's Forum – refer to minutes and presentations for details at cleanairplan.ca.</p>
<p>Continued operation of the Resource Management Burning Regional Working Group Subcommittee</p> <p>Forum for discussion of new techniques, reporting on debris reduction achievements and co-ordination of burning activities among emitters.</p> <p>Forum for continual improvements (adaptive management) to AMP and process related to resource management burning</p> <p>Make group recommendations to Skeena-Stikine and Nadina Forest Districts regarding their respective Burn Management Plans / burning policies prior to plan expiry annually. Recommendations might include:</p> <ul style="list-style-type: none"> • Review boundaries used for smoke sensitivity zones and burn bans • Max # of Burns per smoke management zone • Expand use of sunrise/sunset window for burning • Expand involvement of flight services, air charter operators in burning plans to improve flight safety. • Consistency where possible between plans 	<p>MOE or Subcommittee to provide venue and agenda for meetings, and other avenues for ongoing communication (i.e. website and written educational materials)</p>	<p>Pre and post burning season meetings and level of participation by all stakeholders will determine success of this strategy.</p>	<p>Post-burning season meeting did not happen in 2006 – at 2005 meeting a pre-season only schedule was approved. Extra effort for second meeting is directed into ongoing and direct communications on implementation of strategies.</p> <p>AMS had input from Fire Protection Service on development of residential outdoor burning brochure for Hazelton April 2006.</p> <p>All burn plans have now been updated (2005) and are consisted with Clean Air Plan objectives. New versions are posted at cleanairplan.ca</p>

Detailed Strategy Description	Feasibility	Monitoring & Evaluation	Status
<p>Continually explore alternatives that directly target reductions in the amount of debris to be burned and/or emissions from debris being burned.</p> <p>Reduce the amount of debris targeted for burning. Consensus based approach to set targets and agree on strategies. Targets could be related to existing government allowances. Strategies could include processing at the stump, scattering and covering debris during road construction, returning larger material to the block vs. piling, exploring chipping or mulching options and non-burning options.</p> <p>Annual reporting on alternatives and success stories to provide a record of improvements that can be compared with air quality.</p> <p>More detail is outlined in Appendix F-2: Recommendations to District Level Burn Plans, and several ground level strategies.</p>	<p>Subcommittee best forum for this purpose. Tracking of burning already done, tracking of not burning is new. MOE could provide a reporting template: Total waste volume, Actual Burned Volume, Unburned Volume (% of total)</p>	<p>Emitters to provide reports on debris burned vs not burned (cubic metres) in specified zones of district workplan areas.</p> <p>Wildfire risk and loss of productive ground will need assessment.</p>	<p>More work on this strategy is needed. This will be the focus of the 2006 Burn Operator's Forum.</p>

6.7 Additional Working Group Recommendations

- No variations on above regional strategies requested by community working groups
- Forest Plans (Forest Stewardship Plans): set cutblock CWD levels, preferably higher than in past utilisation standards

6.8 Tools and Resources

- Tools include custom three-day **venting index forecasts**; co-operation / co-ordination of burning activities; evaluation of wildfire / insect hazard abatement requirements vs. possibilities for debris burning variances; education—including spreading the word about good practice and rules; inclusion and improvement of existing smoke management plans.
- Smoke management plans should include all necessary contacts, such as fire danger class rating links and phone numbers to obtain MOF **burn reference numbers**, MOE burn ban information, and venting index forecasts.
- Skeena Region Air Quality Information Line 1-888-281-2992 (Environment Canada Public **Venting Index forecasts** for Smithers and Burns Lake and to find out information on mandatory (ie. burn ban) and voluntary emission reduction strategies are in place, MOE regulatory requirements for open burning and daily air quality conditions.
- Ministry of Forests Burn Reference Numbers 1-888-797-1717
- Ministry of Environment-Skeena Region (Smithers) (250) 847-7260
- Environment Canada 2-day Spot Venting Index Forecast
Call 1-250-491-1544 to set up an account and 1-900-565-2255 to obtain spot venting index forecast (fee of \$25 per forecast, will need to provide latitude, longitude, elevation and aspect)
- Venting Index Forecast
<http://MOEwww.gov.bc.ca/epd/epdpa/venting/venting.html>
- BVL D 3-day Custom **Venting Index Forecast** (see Appendix F)
Contact Armel Castellan at 250.847.7547 or e-mail Armel.Castellan@gov.bc.ca (no fee, provide lot location, elevation, number and size of piles)
- The following documents are available at cleanairplan.ca
 - Skeena Region Guide to the OBSCR:
 - MOE Guide to the OBSCR:
 - OBSCR Checklist
 - Nadina Forest District Burn Management Plan
 - Bulkley Timber Supply Area Burn Plan for Smoke Management