BULKLEY VALLEY - LAKES DISTRICT AIRSHED MANAGEMENT PLAN *BACKGROUNDER* FOR THE COMMUNITY WORKING GROUPS

MARCH 21, 2003

PREPARED FOR:

THE BV-LD AIRSHED MANAGEMENT PLAN

COORDINATING COMMITTEE

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I. INTRODUCTION

Welcome, and thank you for your involvement in the development of a new Airshed Management Plan for the Bulkley-Valley Lakes District.

The purpose of this backgrounder is to:

- Describe the overall planning process
- Detail the history behind airshed planning in this area
- Introduce key concepts relating to air quality and airshed planning
- Describe key issues, initiatives and regulations affecting local air quality
- Provide examples of Airshed Management Planning frameworks
- Outline resources that can be used in the development of the new Plan.

This is intended to be an introductory manual, developed for people with little or no experience in airshed management planning. From our experience, the degree to which participants prepare for each meeting makes a great deal of difference to the planning process. Many decisions will be made over the next twelve months. Our hope is that this Backgrounder will provide all participants with a basic level of knowledge early on in the process to increase confidence and move the planning process forward at a pace that everyone is comfortable with.

Information on how a planning process works in terms of group dynamics, meeting logistics, and commitment to the long term objectives of this process will be covered in our first meeting. These concepts will be revisited and documented as needed. Facilitators will be available to coordinate meetings and tasks as necessary, and we encourage all members of each Community Working Group to make requests for information or ask for clarification whenever it is needed.

II. DESCRIPTION OF THE BVLD PLANNING PROCESS

There is a high level of community interest in air quality issues in the Bulkley-Valley Lakes District. For the last two years, WLAP staff have been meeting with members of the public to discuss air quality issues and steps for moving forward in this planning process. During that time, we have also received the results of an Environmental Appeal Board hearing regarding the operation of beehive burners in our area. As a result of these activities, Ministry staff launched a new airshed planning initiative for the area stretching from Endako to Kitwanga.

COORDINATING COMMITTEE

The Planning Process itself began with the hiring of a process facilitator in November 2002 to provide support services to a **Coordinating Committee.** This five-person committee represents the general public, industry, government, and non-profit groups and is charged with two tasks:

1. Develop background information to support the drafting of a new Regional Airshed Management Plan.

2. Recruit members for Community Working Groups from which a Regional Working Group can be formed.

The members of the Coordinating Committee are:

- Wes Giesbrecht, Citizen (Smithers)
- Pam Hext, Regional District of Bulkley-Nechako (Burns Lake)
- Leroy Reitsma, Canfor (Houston)
- Dave Stevens, Community Health Opposition to Known Emission Dangers (CHOKED) (Smithers)
- Dave Walgren, Pacific Inland Resources (Smithers)

The CC will disband shortly after March 31, 2003, when the Community Working Groups have begun their planning process.

The Coordinating Committee has adopted the symbol shown in Figure 1 to represent how the various Working Groups interact with each other.

Figure 1 – The Process Model

ADVISORY COMMITTEE

The **Advisory Committee** represents the interests of provincial and local levels of government who are supporting this Airshed Planning Process. Members are responsible for:

- Providing advice to the Coordinating Committee regarding the feasibility of the proposed plan components;
- Identifying and helping to secure funding for plan components.

When the Coordinating Committee disbands and the Community and Regional Working Groups take over, the Advisory Committee will remain to perform these same functions. Members of the Advisory Committee are:

- Jim Hofweber, Acting Regional Waste Manager, Ministry of Water, Land and Air Protection (Skeena Region)
- Dave Walgren, Mill Manager, Pacific Inland Resources
- Sharon Smith, Mayor of Houston
- Jim Davidson, Mayor of Smithers

COMMUNITY WORKING GROUPS

Members of the **Community Working Groups (CWG)** will participate in the development of the Airshed Management Plan at the community and regional levels. The size and operation of each group may vary by community but will likely be in the range of 6 to 12 members. Each group will meet at regular intervals (about 10 to 20 times) over the course of the 12-month planning period. Local citizens with a variety of different backgrounds may participate on the CWGs.

Each Community Working Group will focus on air quality issues in their respective community, as well as those issues that have implications for the regional airshed.

Members of the CWGs have a mandate to:

- Understand factors affecting air quality in the airshed planning area;
- Identify sources and use science-based information to understand the effects of fine particulate air pollution in their respective communities;
- Collaborate with contributors and others to identify and implement solutions for reducing emissions, based on scientifically predicted benefits to air quality;
- Consult with the Advisory Committee as needed to establish priorities and understand the feasibility of each proposed solution;
- Develop and endorse the new Bulkley Valley- Lakes District Airshed Management Plan;
- Represent their community level concerns through membership on the Regional Working Group;
- Refer issues of regional application to the Regional Working Group (at their discretion);
- Provide input into public and media relations around the planning process as needed;
- Use consensus to make decisions in the Community Working Group.

REGIONAL WORKING GROUP

A **Regional Working Group (RWG)** will be formed to represent all of the interests and values found in the Airshed in a fair and equitable manner. The Community Working Groups will appoint members from within their groups to sit on the RWG. It is expected that the RWG will have approximately 12 members.

Members of the Regional Working Group will participate in the development of the Airshed Management Plan at the regional level. It is anticipated that the RWG will gather as needed, but likely will have between 6 and 20 meetings in person, by phone, or through e-mail.

Members of the RWG are charged with:

- Understanding factors affecting air quality in the airshed planning area;
- Identifying particulate sources and applying scientific modelling to explore solutions common to all airshed communities;
- Incorporating issues and solutions identified by the Community Working Groups into the Regional Plan in a fair and equitable manner;
- Consulting with the Advisory Committee as needed to establish priorities and understand the feasibility of each proposed solution;
- Developing and endorse the new Bulkley Valley- Lakes District Airshed Management Plan;
- Providing input into public and media relations around the planning process as needed; and
- Using a consensus model to make decisions.

TIMELINES FOR THE PLANNING PROCESS

The planning process has three phases with the following objectives:

Phase 1: Prepare background materials and recruit membership for Community Working Groups through Open Houses, media relations, and direct invitation (by March 31, 2003)

Phase 2: Review the existing Bulkley Valley Airshed Management Plan; identify community and regional air quality management issues; analyse existing scientific information relevant to these issues; and, if necessary, identify the need for new scientific data.

Phase 3: Develop and finalize a Regional Airshed Management Plan that identifies improved methods of managing all sources of fine particulate air pollution. The target for a preliminary plan is March 31, 2004.

A chart showing the timeline for the overall planning process and the various tasks required for the development of the new Airshed Management Plan is included as Appendix A.

III. AIRSHED MANAGEMENT PLANNING

WHAT IS AN "AIRSHED"?

An airshed is a geographic area where similar sources of pollutants, weather and terrain influence the air quality. Air pollution knows no boundaries – political, neighbour-to-neighbour, or otherwise.

The Bulkley Valley - Lakes District (BVLD) has been identified as an airshed for this planning process. Fine particulates have been identified as an important component of our air quality, but other significant contributors may also be reviewed.

HOW IS AIR QUALITY DETERMINED?

The **air quality** in an airshed is determined by many factors, including global, regional and local events. We have no control over factors such as the continental air masses moving through the province, the temperature inversions which may trap lower level air, or contaminants entering from outside the region. However, we do have control over the pollutants put into our airshed from local household and industrial sources.

Air quality can be measured in many ways. We are initially focusing on the concentration of fine particulates in the air because they have a significant impact on quality of life issues in the Bulkley Valley-Lakes District, and because they are currently monitored more extensively than other pollutants (see Figure 2).

Figure 2: Summary of continuous monitoring in the Bulkley Valley-Lakes District

Station Name	Endako	Burns Lake Fire Centre	Houston Firehall	Smithers-St. Josephs	Telkwa
Station Location	Endako	#8 4th Avenue	3382 11th Street	4020 Broadway Avenue	1304 Birch Street
PM_{10}		03/97-current	02/97-current	02/97-current	02/98-current
$PM_{2.5}$			03/01-current		
Meteorology	07/97 - current	03/97-current	11/94-current	11/94-current	01/98-current

During atmospheric inversions, fine particulates trapped in a valley can result in high readings for both very small ($PM_{2.5}$) and larger (PM_{10}) particulates.

WHAT IS "AIRSHED MANAGEMENT PLANNING"?

Airshed Management Planning is a process through which all sources of a particular pollutant (or pollutants) are examined to determine their contribution to air quality, and strategies are developed to reduce impacts associated with each source based on predicted benefits to air quality.

The planning process will require priorities to be set based on scientifically measurable results, relative importance of identifiable sources and emissions, concerns about emission impacts, and the availability and effectiveness of strategies for reducing emissions and their impacts. These priorities must reflect community, regional and provincial values.

WHAT ARE FINE PARTICULATES?

> *Airborne small particulates from combustion sources are the single greatest air pollution problem in British Columbia (BC Ministry of Health 1994)*

Fine particulates are tiny, airborne solid or liquid particles (excluding pure water) that come in many shapes and sizes, and from many different sources. They are also called **particulate matter** or **PM** for short.

PM_{10}: particulates 10 micrometres (μm) or less in diameter (includes PM2.5).

$PM_{2.5}$: particulates 2.5 micrometres (μm) or less in diameter.

To help put this into perspective, the diameter of a human hair can be anywhere from 17 to 181 micrometres in diameter.

From a health perspective, bigger particulates are less harmful. Because of their weight, particulates larger than 10 μm settle to the ground relatively quickly. If we do inhale them, they tend to collect in our throat and nose, and are eliminated from our body by sneezing, coughing, nose blowing or through the digestive systems.

Particulates between 2.5 and 10 μm are removed in the upper part of our lungs, and settle to the ground within a matter of a few hours to a few days. In contrast, particles smaller than 2.5 μm can remain in the air for days or even weeks. They can enter the alveolar tissue of our lungs and can cause breathing difficulties and sometimes permanent lung damage.

Common sources of fine particulates in the air include industrial operations, open burning, residential wood heating, vehicle tailpipe emissions and road dust. Their relative importance varies from place to place and from time to time.

TOOLS AND POLICIES FOR MANAGING AIR QUALITY

Airshed Management is not a new concept. Many tools and policies are available or already in place at both the provincial and municipal levels to manage air quality. Industry has also developed many new technologies to help reduce the impacts of their fine particulate emissions. This section provides a brief overview of some of these tools and policies.

a) Science and Technology Tools

Monitoring
Continuous monitoring of fine particulates (PM10 and PM2.5) and meteorology allows us to identify episodes of poor air quality and issue health advisories and burning bans. Longer term monitoring is useful for identifying trends and also contributes to basic scientific understanding of the atmosphere. Figure 2 above lists the monitoring stations operating in the Bulkley Valley - Lakes District.

Emission Inventories
Science-based summaries of fine particulate emissions from all sources in the BVLD will allow us to understand the significance of each particulate source and to set priorities for our strategies for managing air quality.

Meteorological Modelling
3-dimensional representation using weather, terrain and land use information will help us to understand the transport of pollutants in a specific airshed.

Dispersion Modelling
The behaviour of fine particulates in the atmosphere can be estimated using dispersion models, which use information from the emission inventory and modelled meteorology. By developing multiple scenarios with a dispersion model, the influence of specific source emissions of fine particulates can be estimated at locations throughout the airshed.

The Ministry of Water, Land and Air Protection has committed to funding an airshed-specific emission inventory as well as meteorological and dispersion modelling for the Bulkley Valley – Lakes District Airshed. Work on these projects is already underway.

Engineering Advances
New technology can be used both to benefit industrial operations and reduce fine particulate emissions. A variety of domestic and industrial technologies have been developed which may be of use in our new Plan.

b) Examples Of Public Policy And Plans

Many examples of existing legislation, policy and planning are available for review and will help shape our new Airshed Management Plan. Some of these are listed below, and the Working Groups may choose to examine others.

- BC Waste Management Act

The BC Waste Management Act is the single most important legislation governing pollution control in British Columbia. It will affect waste discharge permitting, monitoring, enforcement, and pollution prevention planning. The recommendations from our Airshed Management Plan may inform regulators as to needed regulations or provisions in the new Act. (See the web site at http://wlapwww.gov.bc.ca/epd/waste_mgt_review/index.html for more information.)

- Bulkley Valley Airshed Management Plan

This Plan was created in 1999 and is available to provide Working Groups with an idea of the scope of information that the new Plan might include. Similar information from the Quesnel Airshed Planning process is also available.

- Regional Smoke Management Plans

The Ministry of Water, Land and Air Protection, Ministry of Forests and licensees have worked cooperatively on Smoke Management Plans that set guidelines for finding the balance between land-clearing debris burning, human health & aircraft navigation needs. They define:

- Smoke sensitive and non-sensitive zones
- Where and when roadside and landing pile burns may take place

Decisions are based on weather (wind, mixing height), aircraft navigation safety and wood debris burning needs (pile locations and numbers) within each zone. These plans will be reviewed during our Airshed Planning Process, and recommendations about them may be included.

- Building Codes, Local Bylaws and Education

For some homeowners, wood heat may be the only feasible heating source. Regulations and incentive programs to promote the installation of efficient stoves have been adopted in some communities. Similarly, local bylaws that prohibit backyard burning or restrict the times of use of woodstoves have been applied. Education about the proper operation of stoves, and the selection and storage of wood has been used successfully in many jurisdictions to reduce particulate emissions.

- Environmental Appeal Board Rulings

The findings of the Environmental Appeal Board (EAB) hearing of recent appeals (99-WAS-06/08(d), et al) concerning waste permits governing discharge from beehive burners in the Bulkley Valley give some direction to the overall objectives of this Plan as well.

Of particular interest is the EAB finding that particulate matter discharged from beehive burners in Smithers and Houston does impact air quality in the valley and furthermore, that the discharged particulate matter has an adverse effect on the environment and human health. The approach of this planning process will allow us to better understand the specific impacts of this ruling and resulting changes from actions taken.

The EAB panel also concluded that a reasonable and appropriate objective for air quality in the Bulkley Valley is 25 µg / m^3 for PM 10. This objective agrees with the 24-hour reference level recommended by the Federal Provincial Working Group in Air Quality Objectives and Guidelines (1997). These conclusions are found on pages 53 and 54 of the panel's report, released April 25, 2002.

- Other Resource Management Plans

Other planning processes, such as Energy Management Planning and Resource Recovery and Waste Reduction Planning may provide useful ideas related to Airshed Management. Where other resource management plans exist, the Regional Airshed Management Plan may complement them or be integrated with some of their provisions.

IV. A FRAMEWORK FOR THE NEW PLAN

Airshed management planning has been ongoing in the Bulkley Valley for over 10 years, with the most recent plan update occurring in 1999. The Ministry of Environment (now Ministry of Water, Land and Air Protection) first developed an airshed management plan for the Bulkley Valley in 1992, and maintains continuous air quality monitors in Burns Lake, Houston, Telkwa and Smithers (Figure 2).

The latest revision of the Bulkley Valley Plan (1999) provides a basis for our work. The new BV – Lakes District Regional Plan can be thought of as a fourth version of the Bulkley Valley Plan, with an expanded geographic area and a greater emphasis on community involvement.

The **major changes** that we expect to see in the new Plan are:

- A wider geographic scope (from Endako to Kitwanga) to include all communities in the airshed.
- Community interests and values will be reflected through the involvement of local citizens from a variety of backgrounds. These knowledge areas will be reflected in the Regional Plan.
- The recommendations of the Regional Plan may be implemented in different ways in different communities, reflecting their interests and values.
- Greater emphasis will be placed on science-based episode management of particulate matter, including improved ambient monitoring, emissions inventory and dispersion modelling.
- Greater emphasis will be placed on the links between air quality and quality of life.

One formula for developing the new Plan is summarized by the following three tasks:

1. Define the present state of air quality
2. Define the desired state of air quality
3. Develop pathways to get from the present to desired state of air quality. Some of these pathways will occur at the community level while others will happen at the regional level. A formal process of plan review, monitoring and adaptation will be part of the Regional Air Management Plan.

DEFINE THE PRESENT STATE OF AIR QUALITY

The present state of air quality will be defined scientifically (when sufficient data is available), and also by other information accepted for review by the Community and Regional Working Groups. The state of air quality may also be defined in comparison to other airsheds. Community Working Groups will have access to all available information to help define the present state of air quality, and will be supported by Ministry staff when technical analysis is required.

DEFINE THE DESIRED STATE OF AIR QUALITY

The Desired State of Air Quality will be based on specific measures of pollutants deemed compatible with **quality of life** objectives for Bulkley-Valley Lakes District residents. Public health and economic development impacts of air quality are two key considerations for Community Working Groups.

Public Health effects of poor air quality are well known. Elevated concentrations of fine particulates have significant impacts on our health, such as increased lung disease, and effects on our heart and blood functions. Poor air quality affects the quality of life for everyone, but especially children, elders, and those who may be living with respiratory and heart conditions.

Economic Development in the Bulkley Valley – Lakes District now includes a wide diversity of industries. Air quality and economic activity are linked; changes to one often affect the other. Both must be considered in any airshed management plan.

DEFINE PATHWAYS TO REACH THE DESIRED STATE OF AIR QUALITY

The Community Working Groups, with the support of scientific data, are charged with developing the pathways to reach the desired state of air quality. It will be important to specify goals and indicators of effectiveness for each recommended pathway so that the job of Plan implementation and monitoring can be done objectively.

Over the past two years, air quality specialists employed by the Ministry of Water, Land and Air Protection and a variety of stakeholders have put together a list of potential pathways for reaching the desired state of air quality. The following point summary of these suggested pathways is provided as a starting point for the Community Working Groups. It is by no means complete.

- Enhance the number and monitoring capabilities of air quality monitoring sites, after identifying gaps through emission inventory and dispersion modeling
- Develop more quantifiable performance measures, such as episode management trigger concentrations for PM 10 and PM 2.5
- Increase standardization between areas with the same problems (e.g. District Burn Plans)
- Provide better information and education about air quality
- Explore a broader range of alternative practices
- Develop economic incentives for change
- Expand the geographic scope of the planning area to include communities from Endako to Kitwanga (see the wall map prepared for the Open Houses)
- Gain a better understanding of when and how to issue specific Health Advisories and Burn Bans (this may include integrating Indoor and Outdoor Air Quality concerns)
- Formalize plan performance reviews and refinement mechanisms; explore organizational solutions to ensure Plan recommendations are implemented.
- Use pathway examples from other jurisdictions
- Consider woodstove and domestic burning initiatives, such as local government support for change-outs and education programs.
- Consider web-based smoke management systems
- Provide web-based information / education (a simple website for the Planning process is now available at www.bvldamp.ca and the Ministry's Skeena Air Page is being updated)
- Address agriculture burning issues (e.g. crop residues are not covered by Open Burning Regulations)
- Examine initiatives to reduce road dust (i.e. Prince George)
- Address visibility (airports) and aesthetic issues
- Integrate Airshed Planning with related land use, resource and economic development planning initiatives in the region

V. SELECTED LIST OF AVAILABLE RESOURCES

REPORTS AND PROCEEDINGS

Bulkley Valley Air Quality Management Plan: Inhalable Particulate (February, 1999) Ministry of Environment, Lands and Parks AQMP-95-01

Bulkley Timber Supply Area Burn Plan for Smoke Management (April, 2002) Ministry of Water, Land and Air Protection & Ministry of Forests, Prince Rupert Forest Region.

Cariboo Regional District Airshed Planning and Ambient Monitoring Agreement (Six agencies)

Quesnel Forest District Burn Plan for Smoke Management

Fine Particulates: What they are and how they affect us (B.C. Environment Brochure)

Okanagan Indoor Wood Burning Appliance Inventory Survey (August 2001) Regional District of Central Okanagan

Consultations on a Canadian Resource Recovery Strategy (2000/2001) Natural Resources Canada

Industrial Composting and Composted Material End-Use Study for the Hazelton, Smithers & Houston Areas, Ministry of Forests (1996)

Home Heating With Wood: The Burning Question. What You Can Do to Clear the Air of Wood Smoke, BC Lung Association (1990)

Skeena Region Beehive Burner Phase-Out: Background, Province of BC (2000)

Woodburning Handbook: How to burn more efficiently in your stove or fireplace and produce less air pollution, California EPA Air Resources Board (2002)

Reforming British Columbia's Electricity Market: A Way Forward, BC Task Force on Electricity Market Reform (1998)

Airshed Management Planning in Quesnel, Quesnel Air Quality Roundtable (2001)

Survey of Residential Woodstove Users in Smithers, BC, BC Environment (1990)

National Ambient Air Quality Objectives for Particulate Matter – Executive Summary, Canadian Environmental Protection Agency (1998)

WEBSITES

There are also a number of websites that provide specific information on health related effects and data for our airshed. Try these for starters:

Ministry of Water, Land and Air Protection websites containing specific information on fine particulates and health as well as local air quality conditions:

http://wlapwww.gov.bc.ca/ske/skeair/pm10/pm10rx.html#pm10

http://wlapwww.gov.bc.ca/air/particulates/index.html

BVLD Airshed Management Plan website:
www.bvldamp.ca

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