

ACR Aboriginal Programs Project Program Template

Program Area:	5.0	Resource Stewardship
Sub Program:	5.1	Strengthening the Knowledge Base
Template:	5.1.1	Air Quality Monitoring and Reporting in the Wood Buffalo Region
Sponsor(s):	<i>Wood Buffalo Environmental Association (WBEA) - 27 member organizations including 5 First Nations, Athabasca Tribal Council and Métis Local #122 (Fort McKay)</i>	

Objective

To monitor and provide accurate, transparent and understandable information regarding environmental air quality in the Wood Buffalo region of Alberta.

Description

WBEA is an independent, community-based, not-for-profit society that collects air quality data continuously in the Wood Buffalo region (an area of 68,454 km²) and reports this information to Alberta Environment, local industry and the community. It endeavours to ensure that what is reported and how it is reported is scientifically-based, credible, and easy to understand. It actively facilitates dialogue among members and others so that they can be responsive to the environment in their planning, decision-making and operation.

WBEA is a multiple-stakeholder agency with representation from First Nations and Métis communities, the public, non-governmental organizations, provincial and local governments, and the oil sands industry. While industry partners fund most of WBEA's operations, each WBEA member has an equal voice. Each member has a chance to be heard and understood, as well as the opportunity to influence decisions that, once made, are supported by all members.

WBEA operates on the basis of being an open, transparent organization. All information that is available to WBEA members is also accessible to community members. Raw data that WBEA collects is continuously transmitted to its website (www.wbea.org) and Alberta Environment. Alberta Environment then uses these data to calculate an air quality index (AQI), which is an easily-understood measure of outdoor air quality. The final resting place for all air monitoring data is the Clean Air Strategic Alliance (www.casadata.org). This is a database for all of Alberta's air monitoring programs.

The processes and equipment used by the WBEA are subject to quality control, as well as government and independent audits to ensure the credibility of the WBEA's data collection and reporting.

Implementation

Some of the key elements for implementation and management of this program are:

- WBEA consists of a governing board of directors (composed of the entire membership) that meets quarterly and has a number of committees. These include a governing committee, a funding committee and committees that reflect the four components of WBEA's monitoring activities within the Regional Municipality of Wood Buffalo. The four components are:
 - **Ambient Air Monitoring Program.** This program is the cornerstone of WBEA. It ensures that accurate and timely air monitoring data is available. WBEA operates the most extensive ambient air monitoring system in Alberta. Data are collected at 14 air monitoring stations (each built at a cost of \$250,000) located between Fort Chipewyan and Fort McMurray, with most of them concentrated at or near the oil sands plants. There are an additional 14 passive monitoring sites in more remote locations. Equipment is subject to rigorous quality control and assurance programs to ensure the highest quality data is collected. These include daily calibration and monitoring of instrument performance with multi-point calibrations and regular government audits. Data is reviewed for long-term systematic errors and all raw and quality controlled data is archived for future reference. Concentrations of several potentially harmful airborne elements and compounds are measured, including sulphur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃), total hydrocarbons, total reduced sulphur compounds (TRS), carbon monoxide (CO) and ambient air particulate matter. Readings are compared to standards established by Alberta Environment for safe exposure levels for varying time periods - one hour, 24 hours or yearly. If air quality guidelines are exceeded, WBEA's network records this and issues a ground level concentration (GLC) exceedance notification to Alberta Environment and industry, including various WBEA members. Industry members review the GLCs to determine if plant operations or events may have contributed to the exceedance.
 - **Terrestrial Environmental Effects Monitoring Program.** This program collects and reports data on the effects of air emissions on plants and soil. Two field projects have been undertaken: a Jack Pine Acidification Program (which was initiated in 1996 and undertakes intense field sampling every six years) and a Lichen Monitoring Program (which was piloted in 2002/2003 and utilizes 44 sites located throughout a 45,000 km² area surrounding existing oil sand developments).
 - **Human Exposure Monitoring Program.** This program monitors, records and examines selected air contaminants that residents are exposed to daily - in their homes, at work, and outdoors. This is the first long-term human exposure monitoring program conducted at the community level anywhere in the world. The program's six-year plan (which began in 2005) involves recruiting volunteers in Fort McMurray and Fort Chipewyan (other communities will be added to the project in the future). As part of their daily routine for a week, volunteers wear monitoring devices to collect data for this study. The study will determine whether or not there are any trends in air contaminant levels to which people in the Wood Buffalo region are exposed in their everyday environment. If trends do exist, they could be used to assist in establishing

links between air quality and potential health-related effects. These data are analyzed by Alberta Health and Wellness.

- o **Reporting to the community.** WBEA recognizes its responsibility to be transparent and accountable to the residents of the Wood Buffalo region. Care is taken to ensure that messages related to air quality are not lost in scientific jargon. WBEA's goal is to explain what it does and the information it collects in a way that is meaningful to members of the public.

Community education and awareness are the primary focus of WBEA's communication activities. WBEA communicates to the public in several ways. Radio and newspaper advertising (Air Facts) offers straightforward information on regional air quality and the work of the WBEA. The WBEA message is taken to the public through quarterly newsletters, presentations to school classes, tours of air monitoring stations, and participation in Fort McMurray trade shows, the Wood Buffalo Science Fair, and open houses held in conjunction with the Regional Aquatics Monitoring Program (RAMP) and the Cumulative Environmental Management Association (CEMA).

Timeframe for Results

WBEA had its beginnings in 1985 when the Fort McKay First Nation expressed concern about air quality. In response, government and industry formed an Air Quality Task Force. The task force described issues, established priorities and recommended on-going dialogue and a consensus-based approach to air quality concerns. Later, the task force became the Regional Air Quality Coordinating Committee (RAQCC). This group prioritized regional air quality concerns and coordinated a program to manage air quality in the Wood Buffalo region. In 1997, the Government of Alberta developed a regional approach to air quality monitoring under the umbrella of the Clean Air Strategic Alliance (CASA). RAQCC joined CASA as the Wood Buffalo Environmental Association. WBEA assumed responsibility for ownership and operation of a regional consolidated air quality monitoring network in the region that included ecological and health effects monitoring.

WBEA now has a continuing mandate to monitor air quality in the Wood Buffalo Region. Raw data from the 13 ambient air quality monitoring stations is reported continuously on the WBEA website. Information from the Terrestrial Environmental Effects Monitoring and Human Exposure Monitoring Program programs is posted on the website as it becomes available. Data is tabulated annually and included in a yearly report that is available in both print and on the website. Information from the annual report is summarized in a community report that is delivered to each home and business in the region.

Measurable Criteria

- Data collected through the Ambient Air Monitoring Program is compared to that collected in previous years and to standards established by Alberta Environment for safe exposure levels for varying time periods: one hour, 24 hours or yearly.
- Data collected in 1998 during the first set of intensive field tests for the Jack Pine Acidification Program serves as a benchmark for subsequent field sampling conducted every six years.
- Data collected during the 2002/2003 pilot of the Lichen Monitoring Program is used as a benchmark for subsequent findings from this study.
- Data from the Human Exposure Monitoring Program is released publicly and posted on the website as it becomes available.
- Feedback collected from residents of the region - through surveys, questionnaires and focus groups - is used to measure the effectiveness of the WBEA's communications strategies.

Budget

Funding for the WBEA's annual budget of \$3.5 million comes from industry. Company contributions are determined using a formula based on each company's atmospheric emissions. The budget figure does not fully reflect the operating and capital costs as many organizations make substantial in-kind contributions.

Partners and Sponsors

Alberta Environment	Imperial Exxon-Mobil Oil
Alberta Sustainable Resource Development	Mikisew Cree First Nation
Alberta Energy and Utilities Board	Northern Lights Health Region
Albian Sands Energy Inc.	Nunee Board of Health
Athabasca Chipewyan First Nation	OPTI/Nexen Inc.
Athabasca Tribal Council	Pembina Institute for Appropriate Development
Canadian Natural Resources Limited	Petro-Canada
Chipewyan Prairie First Nation	Regional Municipality of Wood Buffalo
Deer Creek Energy Ltd.	Saskatchewan Environment
Fort McKay First Nation	Suncor Energy Inc.
Fort McKay Métis Local #122	Synenco Energy
Fort McMurray Environmental Association	Syncrude Canada Ltd.
Fort McMurray First Nation	Toxics Watch Society of Alberta
Husky Energy	UTS Energy Corporation
	Williams Energy (Canada) Ltd.

Experience with the Program

WBEA is an effective vehicle for data collection and monitoring as well as for communication and information-sharing among various stakeholders in the oil sands region. All WBEA members recognize the need to ensure that the quality of “the air we share” remains high. WBEA strives to be transparent in its operation - sharing information with the public, government, and industry that is scientifically-based, credible, easy to understand, and timely.

Others see WBEA as a reliable source for environmental information. Air monitoring data collected by WEBA is regularly used by Environment Canada and independent researchers.

General Applicability

WBEA demonstrates the value of a multi-stakeholder agency that includes broad representation from First Nations communities, the public, non-governmental organizations, provincial and local governments, and the oil sands industry. The consensus-focused decision-making model practised by WBEA ensures that every member organization is able to share its environmental concerns and has an equal voice in developing and implementing the WBEA’s plans. This model could be successfully adopted for any organization in which participants are united by common interests and concerns for environmental issues and protection.

Additional Information or Support

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