

# Swan Valley OSB Presentation to Clean Environment Commission, July 2009



## Presentation Summary

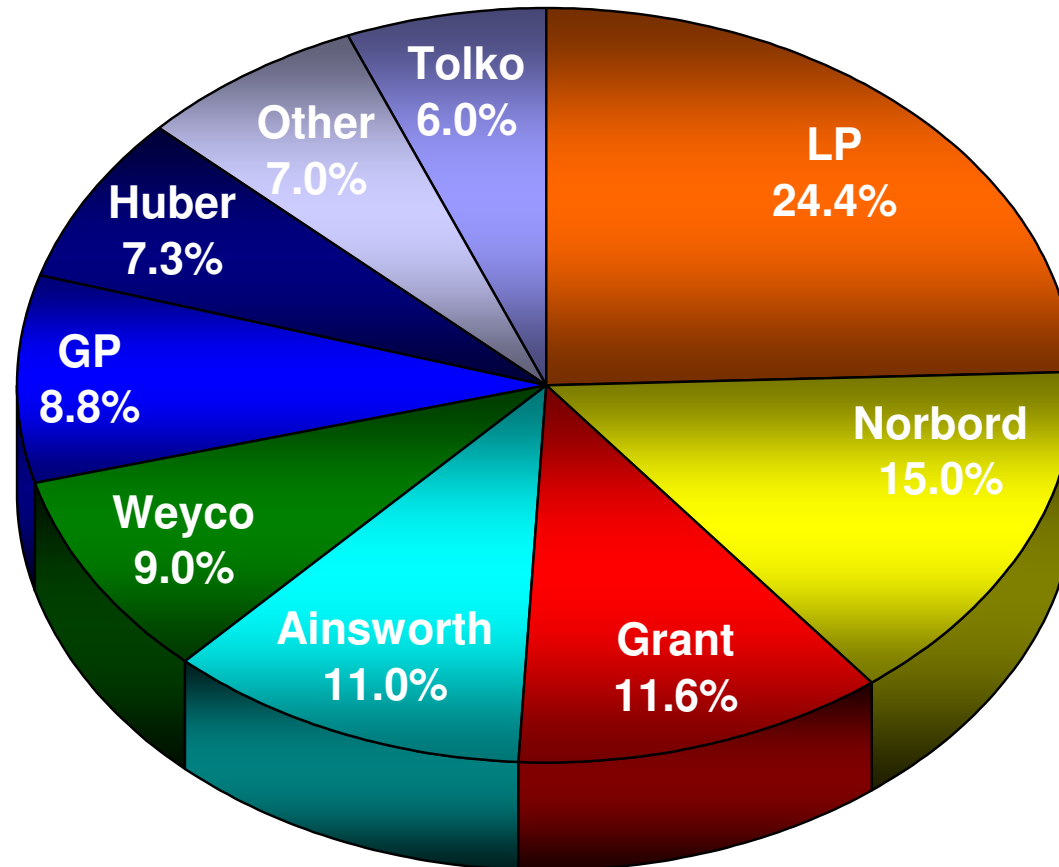
- Company information
- RTO background and history
- Review of the application
- Ambient air quality
- Environmental benefits
- Socio-economic review

# Who We Are

## LP Company Profile

- Founded in 1973
- 26 mills (14 OSB mills)
  - 6 mills in Canada (4 OSB)
- 4 Joint Ventures (2 OSB and 2 EWP)
- 4600 employees (1400 in Canada)

## 2008 OSB Market Share



## LP Vision and Values

- To be a respected, profitable and growing manufacturer of building products. To be a supplier of choice because of our quality products and reliable services. And to be an employer of choice – offering a safe, fun, ethical, challenging and rewarding place to work.
- We will
  - Obey all legal requirements
  - Communicate honestly and truthfully
  - Act with integrity
  - Be fair and respectful in our workplace
  - Safety, Environment and Quality are core values

## Stewardship

- A sincere respect and care for our shared environment is at the core of everything we do.
- Natural resources are critical to our organization: they not only allow us to manufacture the premium building products we're known for, they help us sustain livable communities and a high quality of life.



# Stewardship

- Good environmental stewardship is vital to strength, profitability and sustainability of our company and the communities where we operate.





**We are Local**

## LP Swan Valley OSB

- Operating in the Valley for over 13 years
  - First board produced January 21, 1996
- 175 employees
  - Employment for Valley residents
  - Most of these people lived in the Valley or returned for the opportunity to work near home
- We contribute over \$35 million to the local economy annually
- Active supporter of local community initiatives

# Defining the Issue

## Important Terms

**Volatile organic compounds (VOCs)** - VOC is the collective name given to compounds that are gases at room temperature and which contain carbon as the primary element. VOCs are found naturally in all organic materials such as raw wood, agricultural products and petroleum products. VOCs are commonly found in and released from many consumer products.

**Greenhouse Gas (GHGs)** – Gases that absorb heat radiated from earth. The primary man-made GHGs are carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), and methane). In Canada, 80% of total national GHG emissions are predominantly associated with the production or consumption of fossil fuels.

**Nitrogen oxides (NOx)** – Gases that contribute to ozone, smog, acid rain and fine particulate. Nitrogen oxides occur naturally in the environment but are also generated by the combustion of fuels.

## Important Terms cont'd

**Ambient air** - Open air that is not enclosed within a building, chimney or other structure.

**Ambient air quality criteria (AAQC)** - Many provinces, including Manitoba, have established ambient air quality criteria (AAQC). They are set at the level where no adverse effect is observed on people or the environment.

**Air quality dispersion modeling** – Computer generated mathematical models that are used to predict the ground level concentrations at a point downwind of one or more emission sources.

**Resins** – phenol-formaldehyde and MDI

# What is an RTO?

Water vapour  
VOCs  
CO2 (GHG)  
NOx

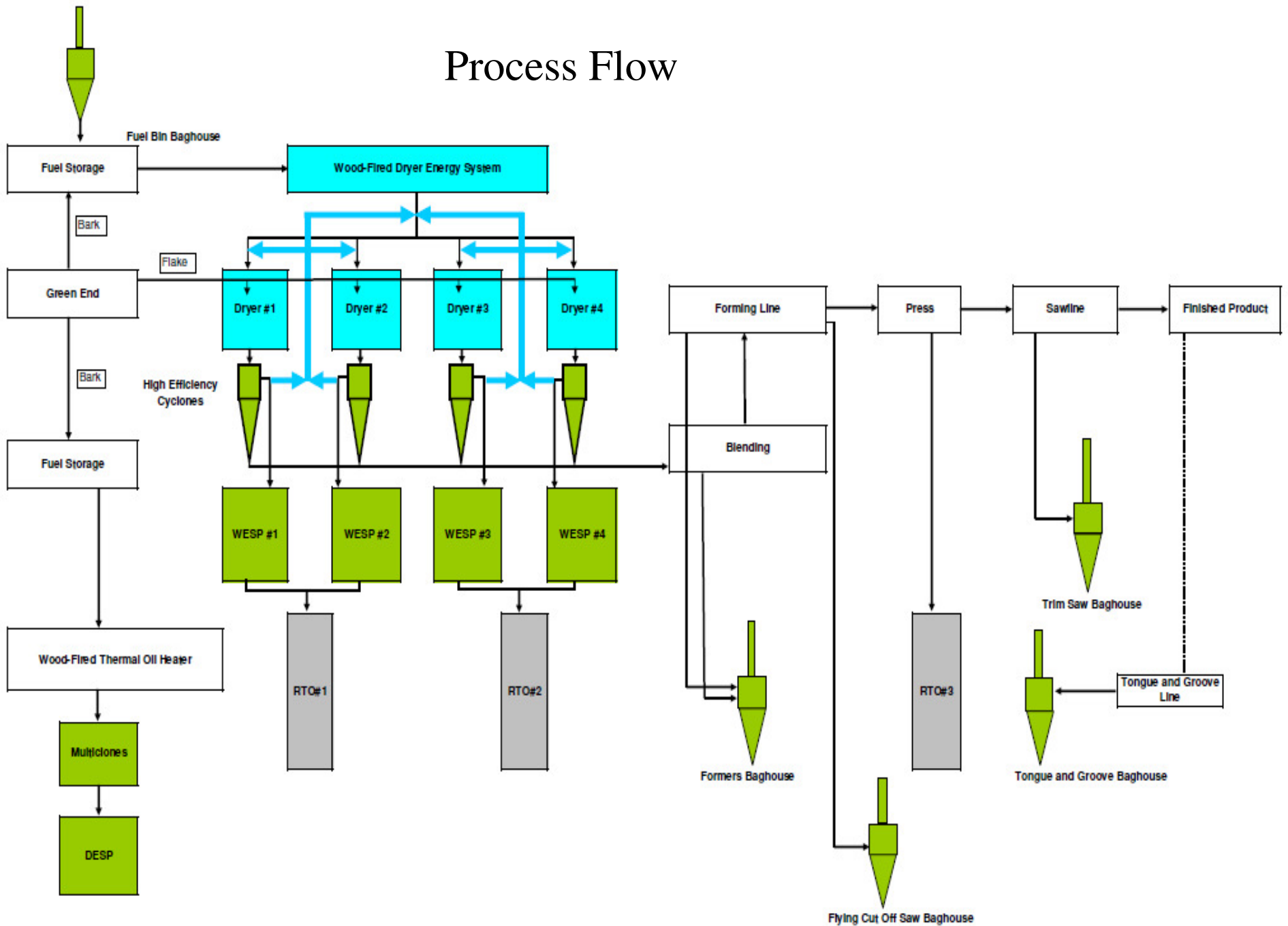
Amount of Energy used is nearly  
2X the usage of all households in  
Swan River combined

Combustion Chamber  
Natural gas

Dryer Gas

**Even without RTOs we still have the highest level of  
pollution control of any facility in Canada**

# Process Flow





## Why We Have RTOs

- 1994 Environmental Impact Assessment (EIA) determined that all applicable air quality criteria were met... without RTOs
- LP proposed to install RTOs due to concerns regarding the uncertainty of a new industry to the Valley.
- At the time it was believed that any Canadian mills built after Swan were going to be constructed with RTOs and existing mills retrofitted with RTOs



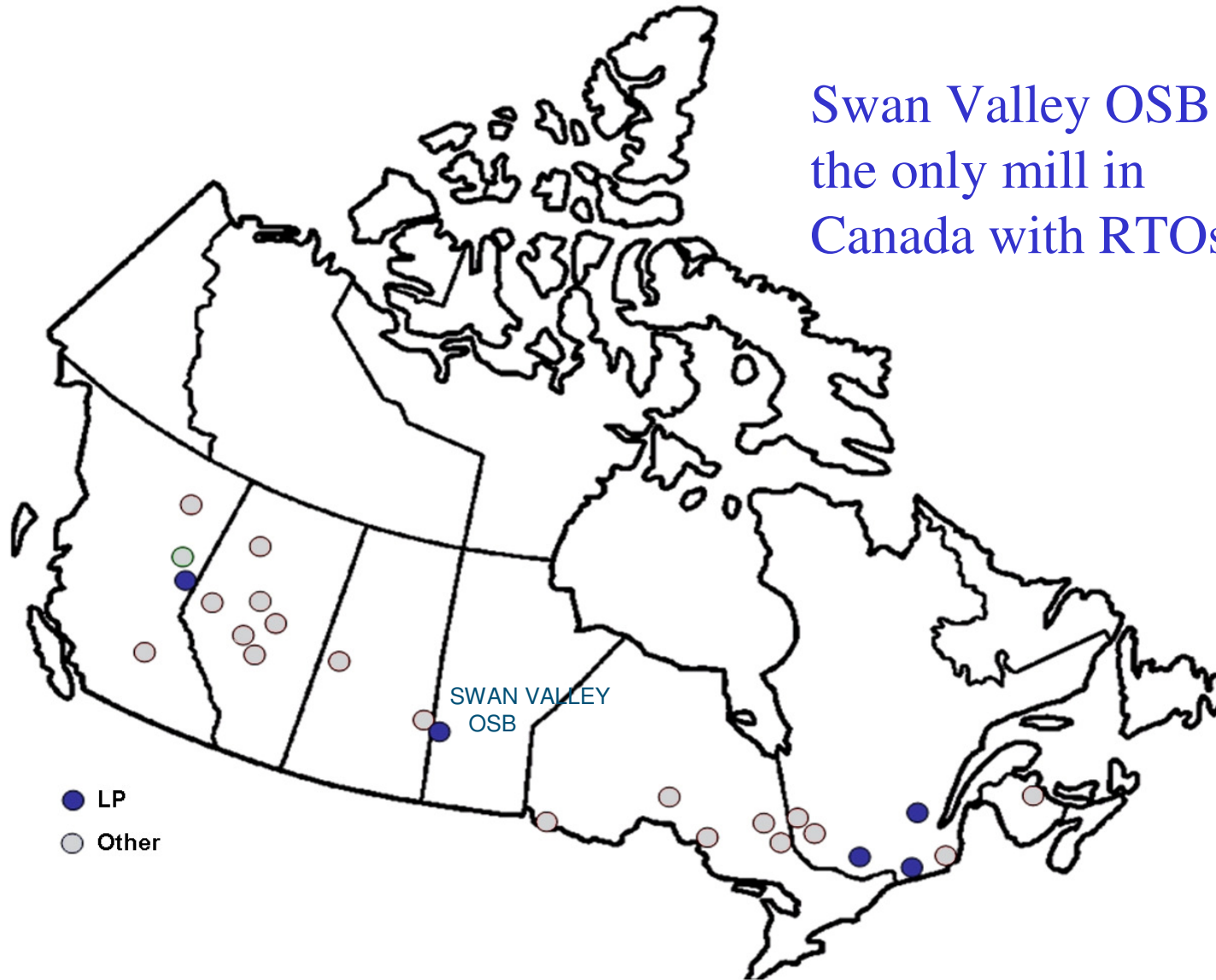
## No Other RTOs in Canada

- After 13 years, still the only wood products facility in Canada with RTOs including
  - 25 OSB mills in Canada
  - 8 OSB mills constructed after Swan



## OSB Plants in Canada

Swan Valley OSB is  
the only mill in  
Canada with RTOs



# Unlikely There Will Ever be RTOs in Canada

- No Canadian (federal or provincial) jurisdiction is advocating RTO technology because of negative environmental impacts (GHG and NOx)



## Highest Level of Emission Control in Canada

- WESPs and high efficiency cyclones on Dryers/Energy System
- DESP & Multiclone on bark fired Thermal Oil Heater
- Five Baghouses on various stages of the flake handling process

## Section Summary

- LP Swan Valley is the only wood products facility in Canada with RTOs.
- Even without the RTOs, LP Swan Valley will still have the highest level of emission control equipment of any mill in Canada.

# Advances in Process Technology

## \$26 Million Technology Upgrade

- In 2004 we installed a state-of-the-art drying and heat energy system
- This technology results in reduced emissions through:
  - Recycle dryer exhaust gas
  - Lower dryer inlet temperatures
  - Gentler drying process



## We started down this path 8 years ago...

- There was a need to address wood residue imbalance
- We recognized an opportunity to:
  - optimize resource usage
  - balance energy demands
  - eliminate RTOs through technology upgrade
  - reduce emissions of greenhouse gases and nitrogen oxides
- Initiated discussions with Manitoba Conservation and Community Liaison Committee regarding the project and future opportunities
  - CLC included Concerned Citizens of the Valley until they withdrew from the committee

## Section Summary

- Latest process technology is in place to reduce emissions

# What is LP Swan Valley Requesting?

## Amendments to the Mill Environmental License

- Increase emission limits from the **Press**:
  - Formaldehyde
  - Benzene
  - MDI
  - VOC
- Increase emission limits from the **WESPs**:
  - Formaldehyde
  - Benzene

## Proposed Modifications

- The proposal includes the construction of a single 49.5 metre dryer/WESP stack
  - Provides for optimum dispersion in order to ensure protection of community health and the environment
- All other emission sources unchanged



# Representative Emission Limits

- 1994 emission limits proposed by LP were developed based on:
  - engineering estimates and emission factors
  - zero site specific data
  - limited industry data
  - many assumptions
- 2009 proposed emission limits based on:
  - actual site specific data
  - latest technology
  - extensive industry data
  - industry specific stack test methods
- Our application is robust based on 13 years of site specific data

## LP Swan Valley Continues to Meet High Standards

- Even with proposed changes LP Swan Valley will still be subjected to more compliance conditions and limits than any other OSB plant in Canada (confirmed in Appendix C, SENES report, 2009)
- Proposed limits conform with any applicable industry standards in Canada

# We Followed the Process

## Applied for an Alteration to the Development:

- Filed a Proposal
  - Determined to be a Major Alteration to the Development
- Screening – proposal reviewed by Manitoba Conservation, the public and a Technical Advisory Committee (TAC)
  - Public review conducted through media advertisement and placement of proposal in the public registries
  - 45 day public consultation period
- Minister called for Clean Environment Commission review and recommendations
  
- Ultimate Licensing Decision by Manitoba Conservation



## Section Summary

- Proposed limits based on site specific data
- Proposed limits conform with industry standards in Canada

# Demonstrating Protection of Community Health and the Environment Through: Dispersion Modeling

## What is Dispersion Modeling?

- Dispersion Modeling predicts maximum ground level concentrations for comparison to ambient air quality criteria (AAQC)
- Dispersion modeling demonstrates that the proposed emission limits will meet all Manitoba AAQC and ensure protection of community health and the environment.

## Approved Modeling Approach

- Followed “Guidelines for Air Dispersion Modeling in Manitoba” (November 2006)
  - LP used Model version *ISC Prime*
  - Detailed modeling protocol approved in advance by MB Conservation
- Performed by Olsson Associates, an outside consultant
- Manitoba Conservation determined that the results were acceptable

## Modeling Results; No RTOs

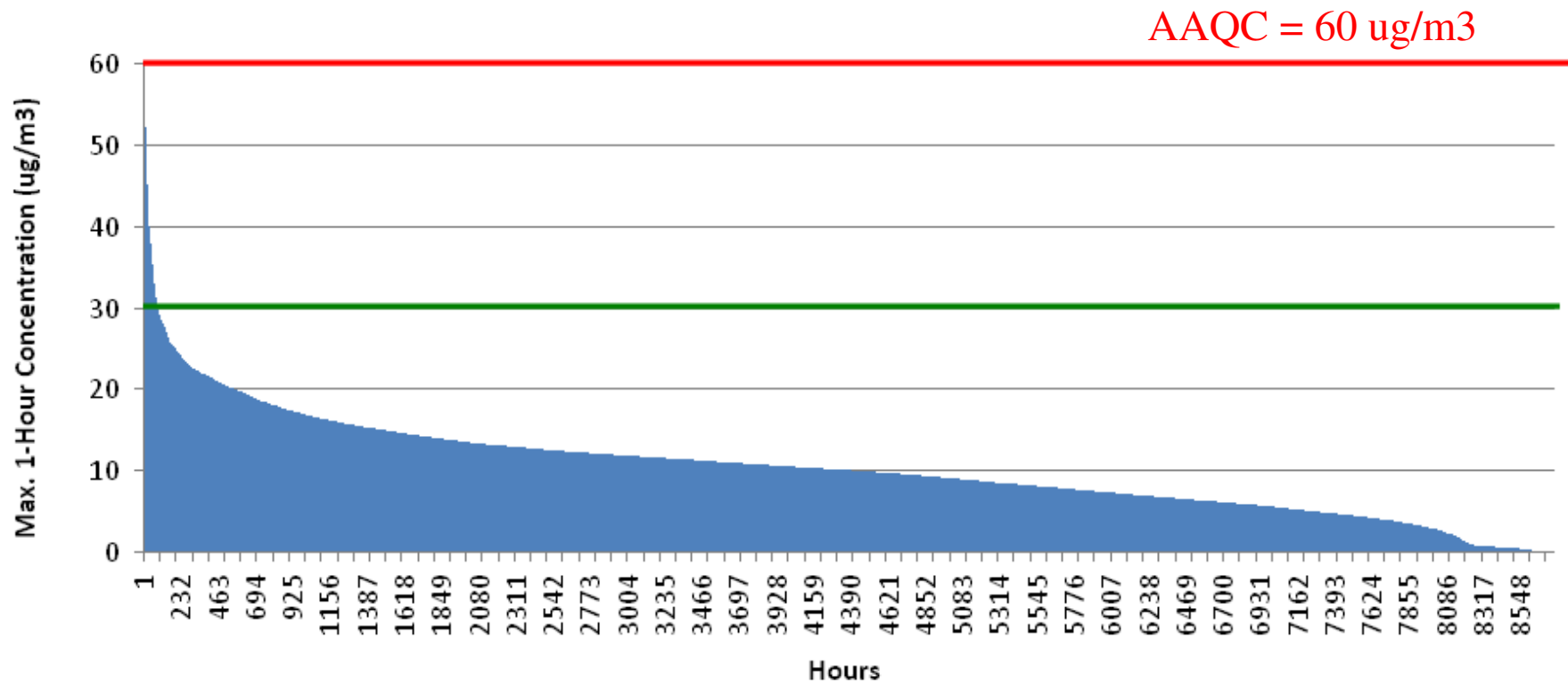
- Maximum ground level concentrations (GLC) meet all applicable AAQC under all conditions without RTOs
- Key model results:
  - Formaldehyde is below AAQC 100% of the time
  - Benzene is below AAQC 100% of the time
  - MDI is below AAQC 100% of the time



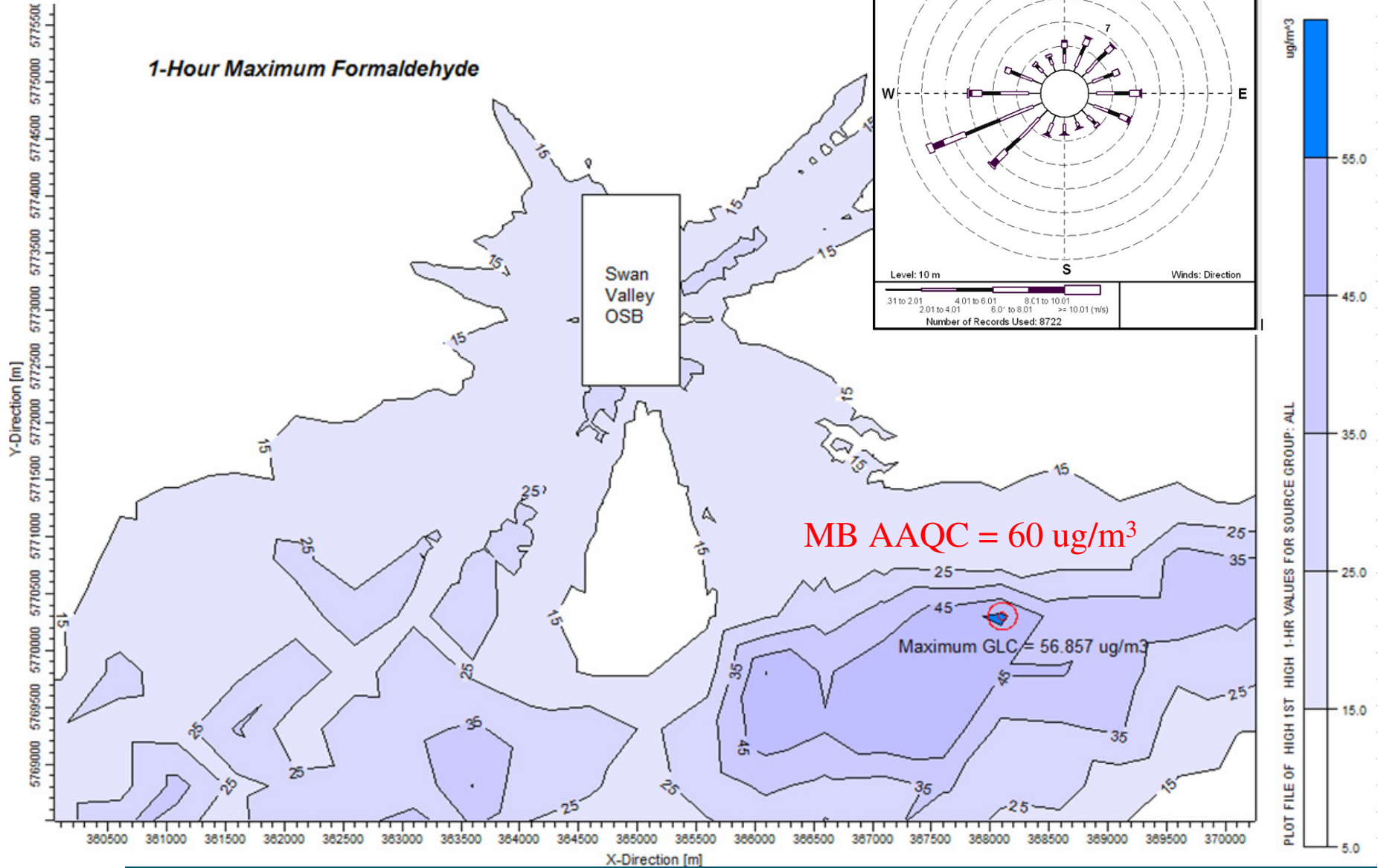
# Comparing to Manitoba AAQC and US EPA Ambient Standards

Substance	Maximum Model GLC (ug/m3)	Averaging Period	Manitoba criteria (ug/m3)	US EPA criteria (ug/m3)
Formaldehyde	56.9	1-hr	60	None
Benzene	2.1	1-hr	30 (Alberta)	None
	0.6	24-hr	10 (Quebec)	None
Hydrogen cyanide	3.9	1-hr	40	None
	0.05	Annual	3	None
MDI	1.9	1-hr	3	None
	0.09	Annual	0.5	None
NO2	147.8	1-hr	400	None
	64.5	24-hr	200	None
	8.5	Annual	100	100
Phenol	38.5	1-hr	63	None
PM	39.7	24-hr	120	None
	6.6	Annual	70	None
PM10	32.4	24-hr	50	150
PM2.5	22.3	24-hr	30	35

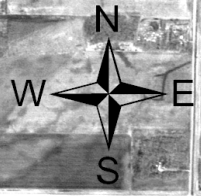
# Formaldehyde below Manitoba 1-hr AAQC 100% of the time



**1-Hour Maximum Formaldehyde**



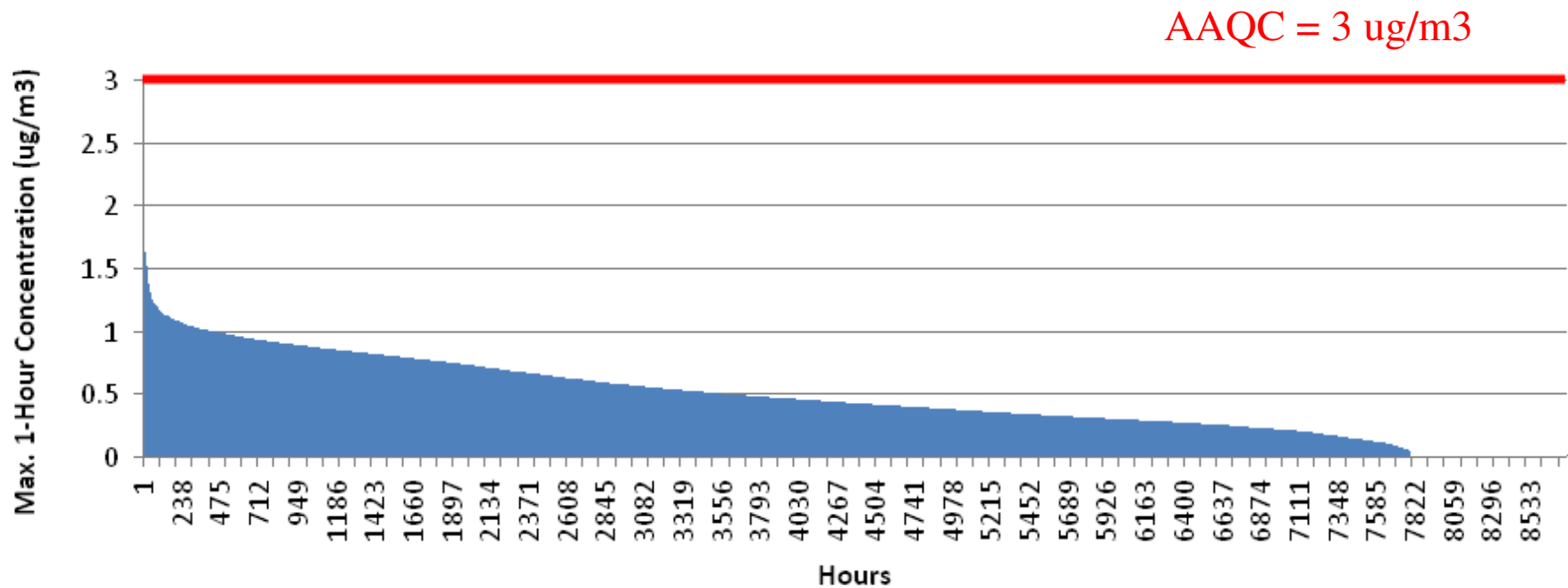




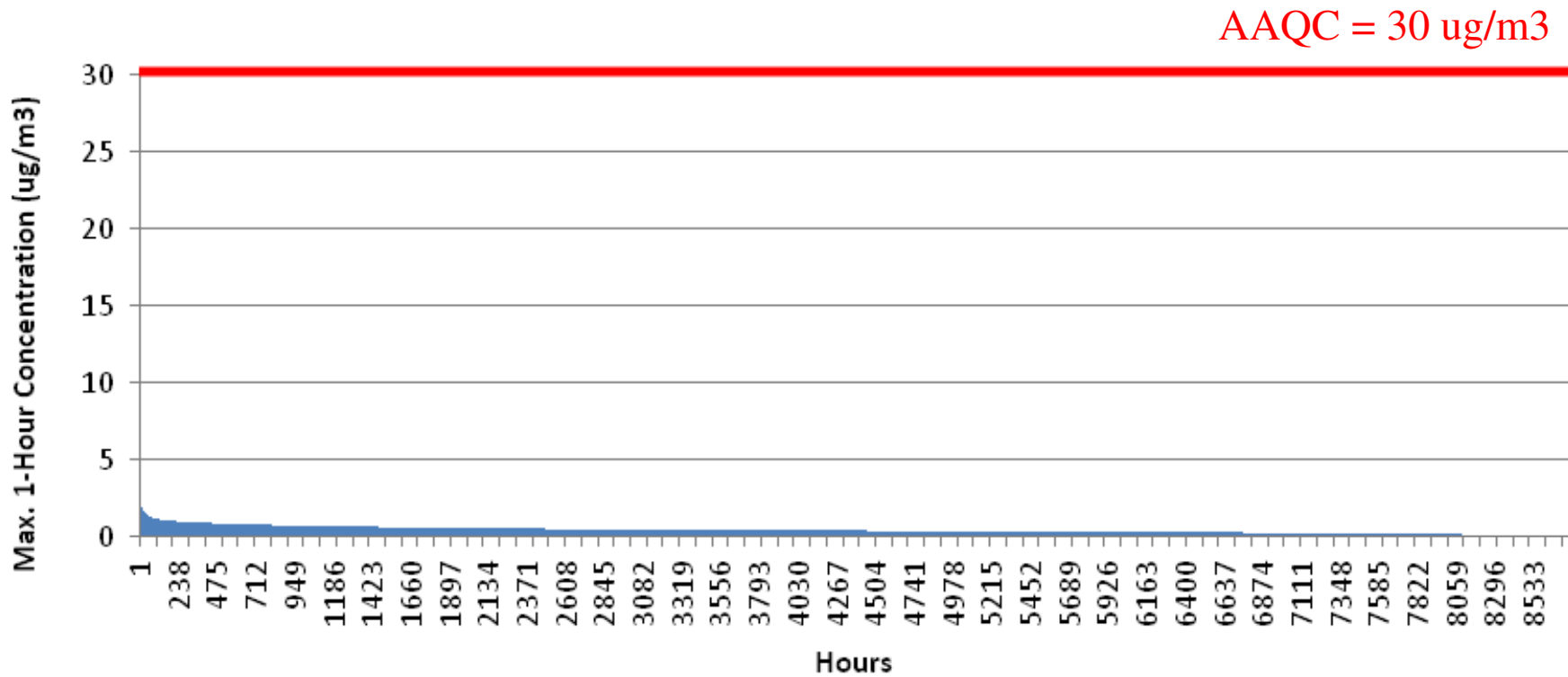
**1 Hour Formaldehyde**



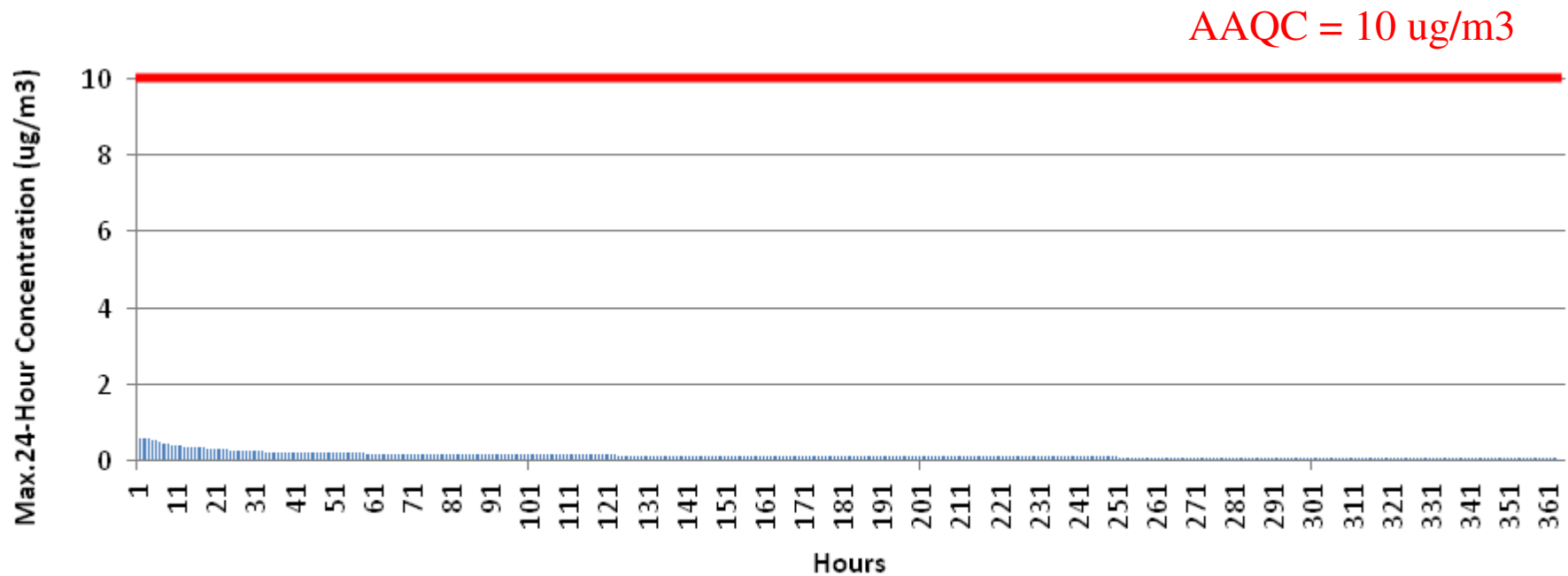
## MDI below Manitoba 1-hr AAQC 100% of the time



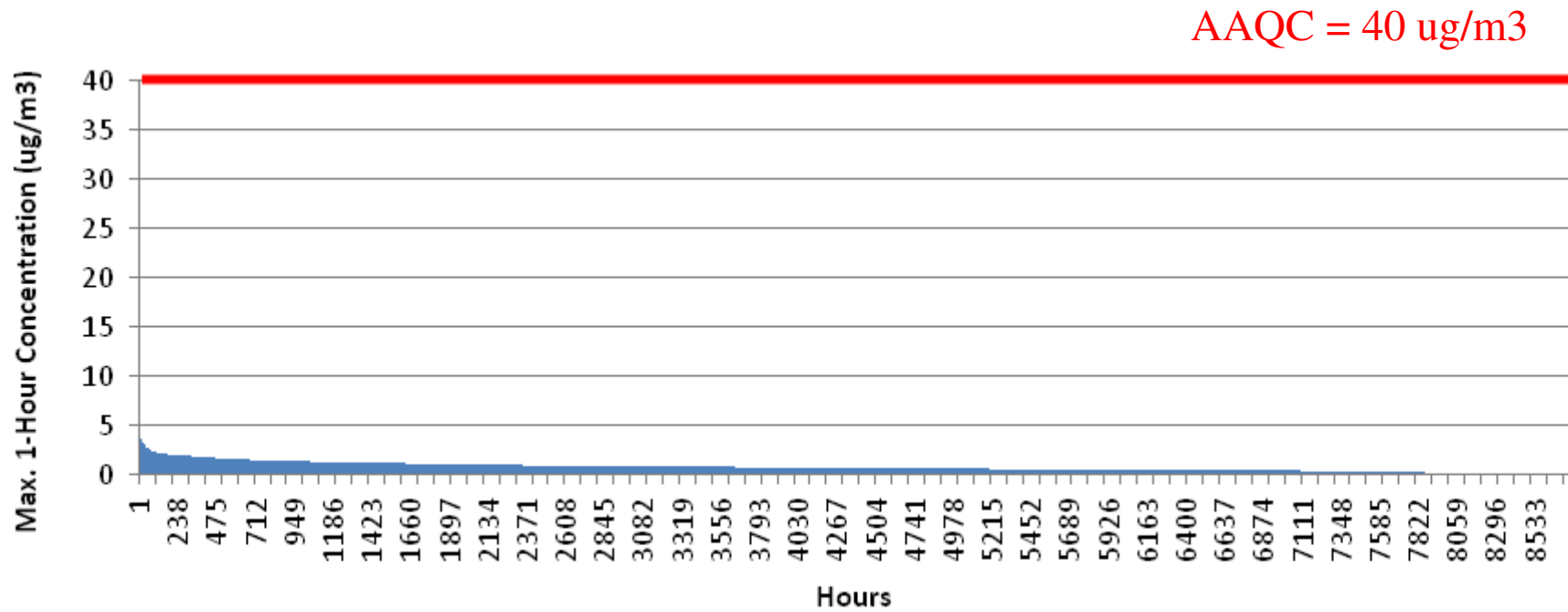
## Benzene below 1-hr AAQC (Alberta) 100% of the time



## Benzene below 24-hr AAQC (Quebec) 100% of the time

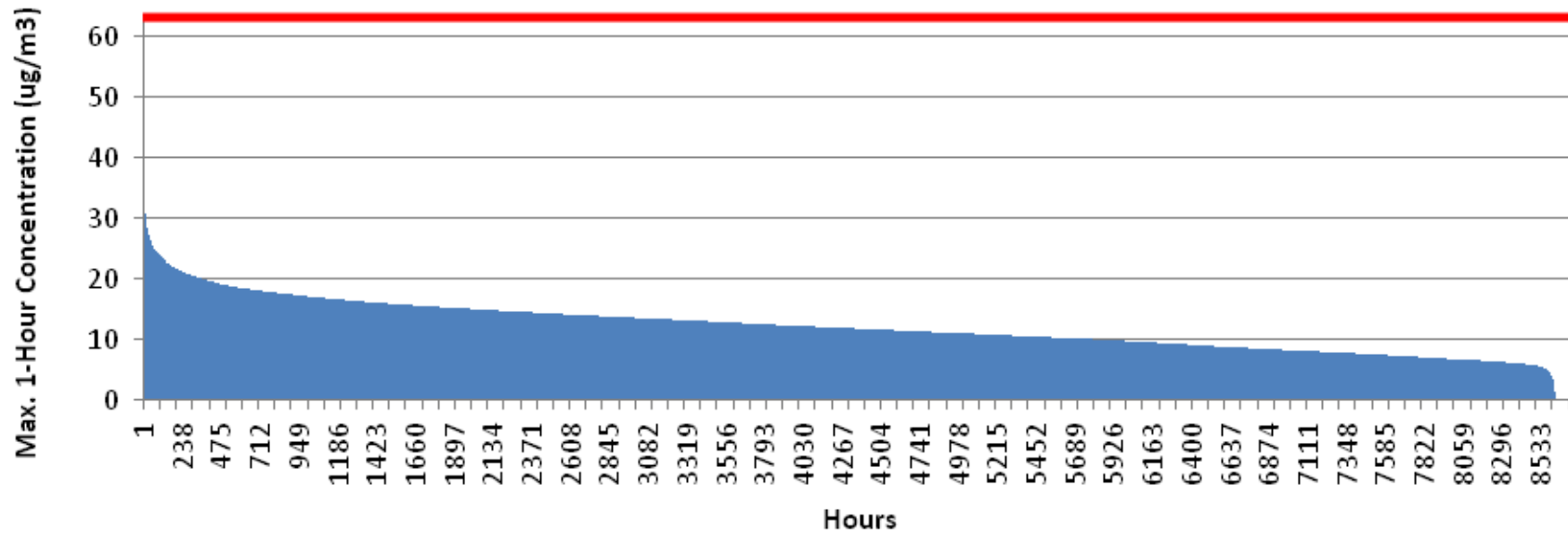


## Hydrogen Cyanide below Manitoba 1-hr AAQC 100% of the time

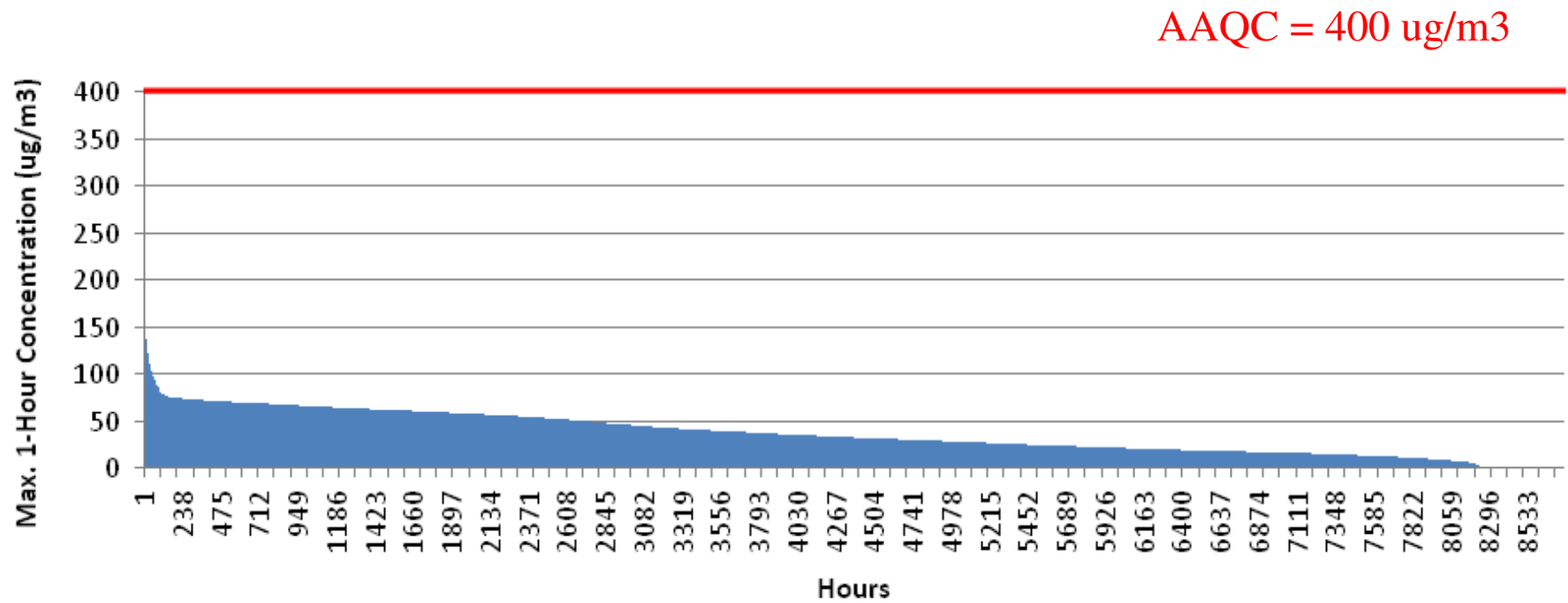


## Phenol below Manitoba 1-hr AAQC 100% of the time

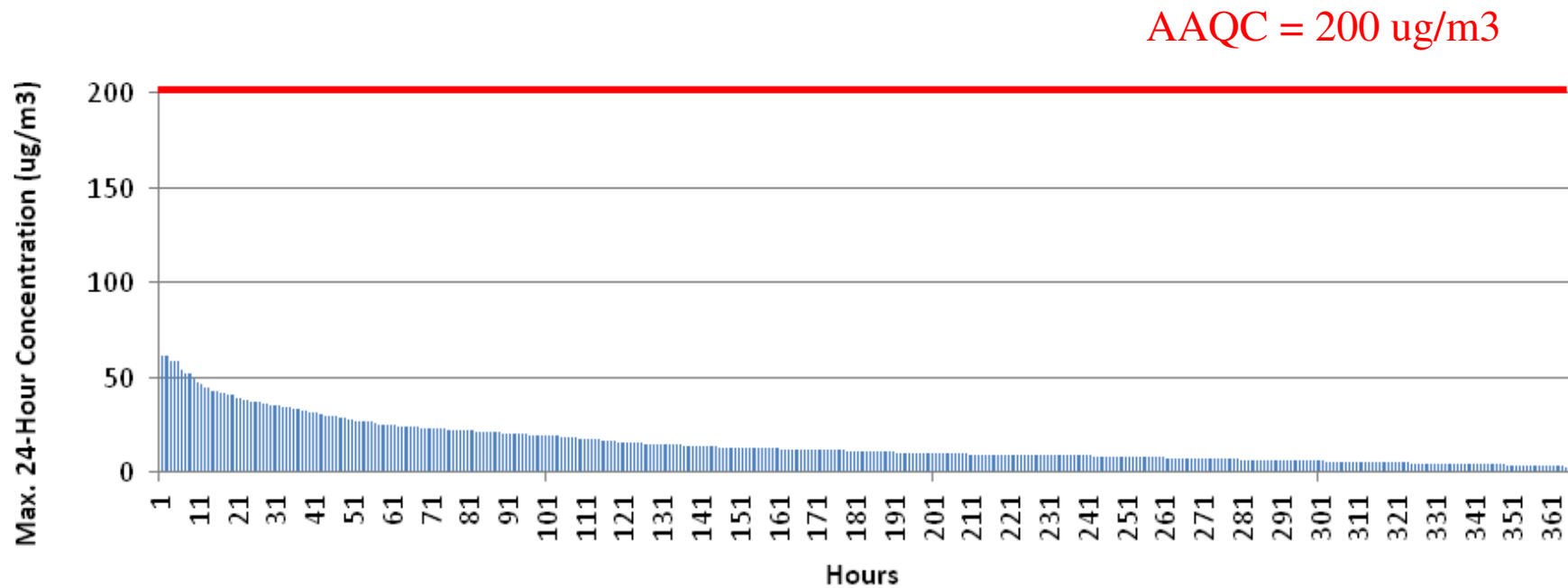
AAQC = 63 ug/m<sup>3</sup>



## NO<sub>2</sub> below Manitoba 1-hr AAQC 100% of the time



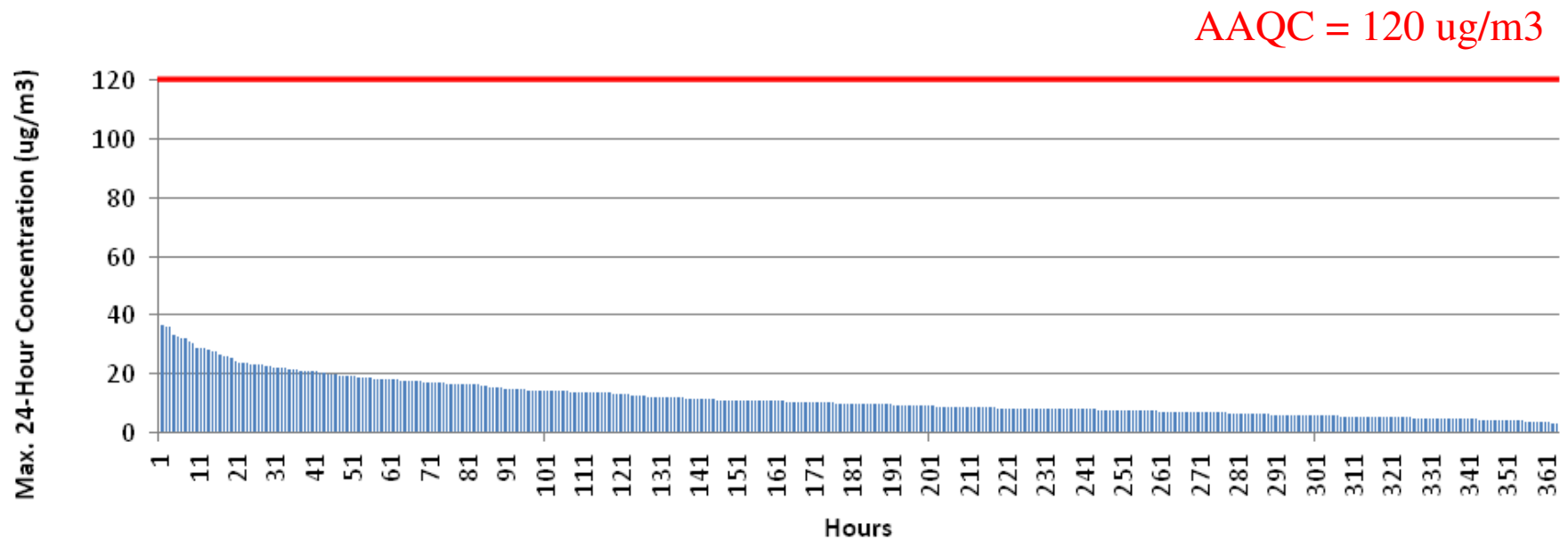
## NO<sub>2</sub> below Manitoba 24-hr AAQC 100% of the time



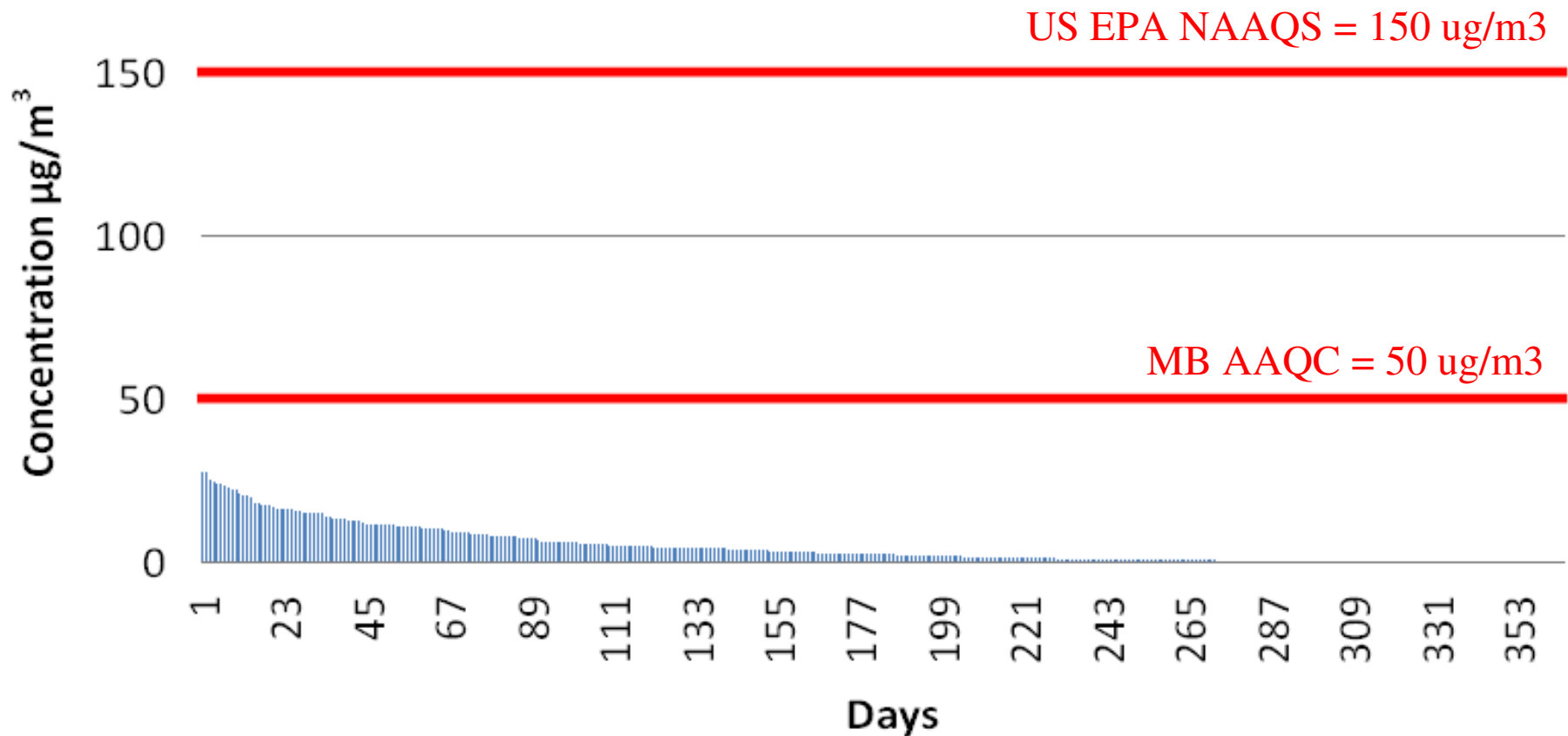


# Total Suspended Particulate

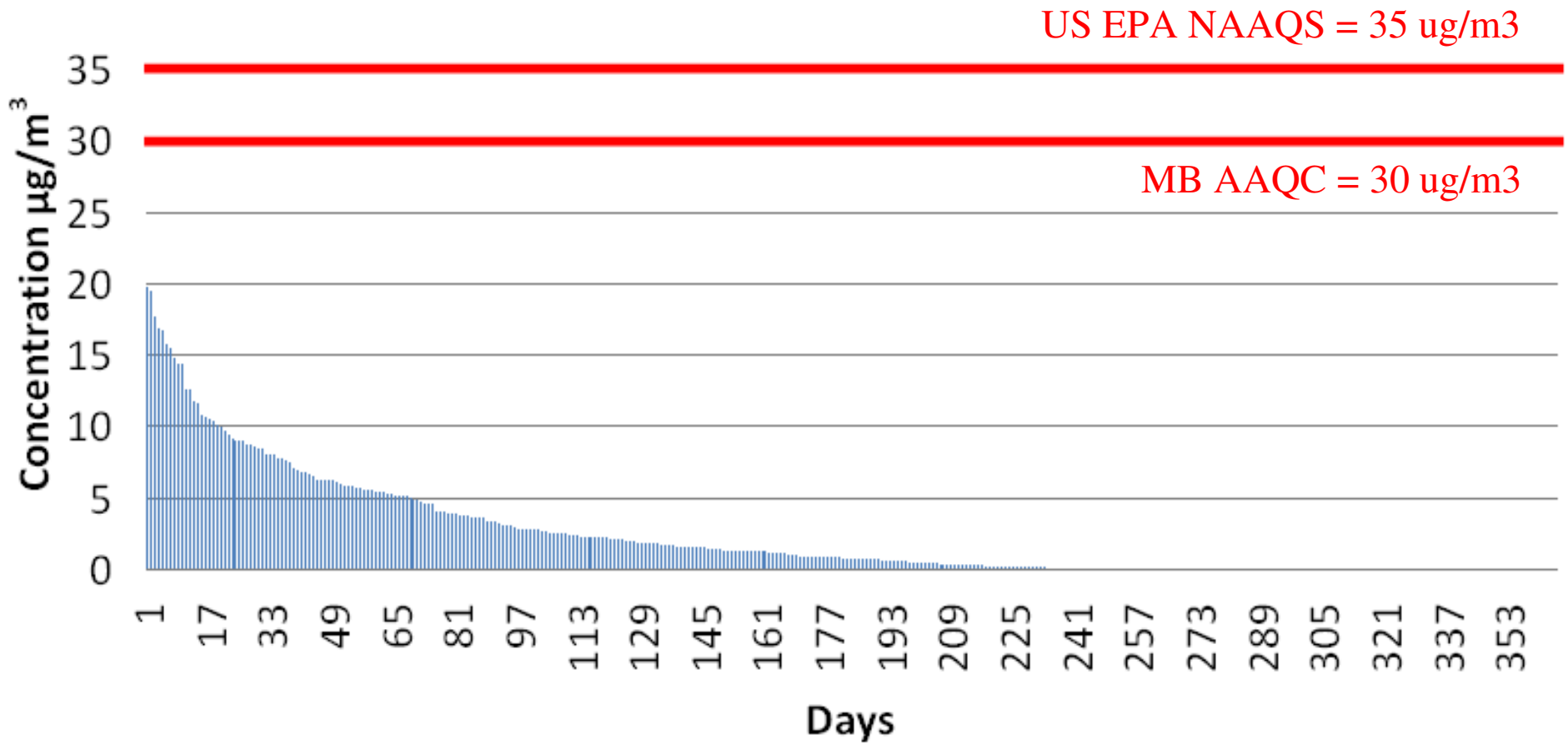
below Manitoba 24-hr AAQC 100% of the time



PM<sub>10</sub> below Manitoba and US EPA 24-hr AAQC 100% of the time



PM<sub>2.5</sub> below Manitoba and US EPA 24-hr AAQC 100% of the time



## Section Summary

- Modeling demonstrates that the proposed emission limits will meet all Manitoba AAQC 100% of the time
- Meeting the AAQC ensures protection of community health and the environment

**Demonstrating Protection of  
Community Health and the  
Environment Through:  
Health Risk Assessment**

## What is a Health Risk Assessment?

- Calculates health risk levels based on
  - the maximum ground level concentrations (GLC) predicted by the dispersion model
  - a comparison to AAQC and human exposure databases
- The Health Risk Assessment demonstrates that the risk associated with the proposed emission limits will ensure protection of community health and the environment

## Rigorous External Reviews Were Conducted

- MB Conservation's Technical Advisory Committee (TAC) reviewed the risk assessment in March 2009 and had no issues or concerns
  - In the TAC summary, Manitoba Health wrote:

*“In general, it seems to make sense that the LP Canada Ltd. Swan Valley OSB Plant be held to the same emission limit standards as that of other similar industries throughout the province/country.”*
- OHG Consulting reviewed the Health Risk Assessment in June 2009 and agreed with the conclusions

## Health Risk Assessment Conclusions

- Health risks associated with cancer determined to be less than 1-in-a-million.
  - 1-in-a-million risk level is the accepted standard worldwide (US, Canada, the UK, the World Health Organization)
- Non-cancer risks were characterized as “no adverse effect”



## What does 1-in-a-million mean?

Risk was characterized by Commissioner of the U.S. Food and Drug Administration (1987) as follows:

“The risk of one in a million is often misunderstood by the public and the media. It is not an actual risk, i.e. it is not expected that one out of every million people will get cancer if they drink decaffeinated coffee. Rather, it is a mathematical risk, based on scientific assumptions used in risk assessment. *When the FDA uses the risk level of one in a million, it is confident that the risk to humans is virtually nonexistent.*”

Source – de Vries (Ed.), “Food Safety and Toxicology,” CRC Press 1996.

## What Does “No Adverse Effect” Mean?

- Recall that AAQC are set at levels at which there is no adverse effect on people or environment
- Dispersion modeling results demonstrated that all AAQC met 100% of the time



## Health Risk Levels Associated with the Proposed Emission Limits

Parameter	Carcinogen	Health Risk Level
Formaldehyde	Yes	<b>7 out of 1 Billion</b>
Benzene	Yes	<b>2.3 out of 10 million</b>
HCN	No	<b>No adverse effect</b>
MDI	No	<b>No adverse effect</b>
NO <sub>2</sub>	No	<b>No adverse effect</b>
Phenol	No	<b>No adverse effect</b>
PM <sub>10</sub>	No	<b>No adverse effect</b>
PM <sub>2.5</sub>	No	<b>No adverse effect</b>

## Comparison to Everyday Risks

- Lifetime Risk All cancers 2-in-100
- Motor vehicle accident 1.7-in-100
- Home accidents 8-in-1000
- Proposed Formaldehyde limit 7-in-1,000,000,000
- Proposed Benzene limit 2.3-in-10,000,000

Health risks associated with proposed emission limits are “virtually non-existent”

## \$500,000 Spent in Community Health Status Studies

- LP was required to conduct a baseline Community Health Status Study in 1995
  - Health was broadly defined to include physical, psychological, social, economic, and environmental well-being.
  - Unprecedented at the time.
- Follow-up Community Health Status Study was conducted in 2001
  - Undertaken to determine whether or not the OSB plant has had an effect on health, for better or worse, as measured against the baseline data.
  - Concluded that there has been *an increasing and general consensus that the plant is “a good thing.”*
- In 2006, MB Conservation determined that no further health studies were warranted.

## Section Summary; No RTOs

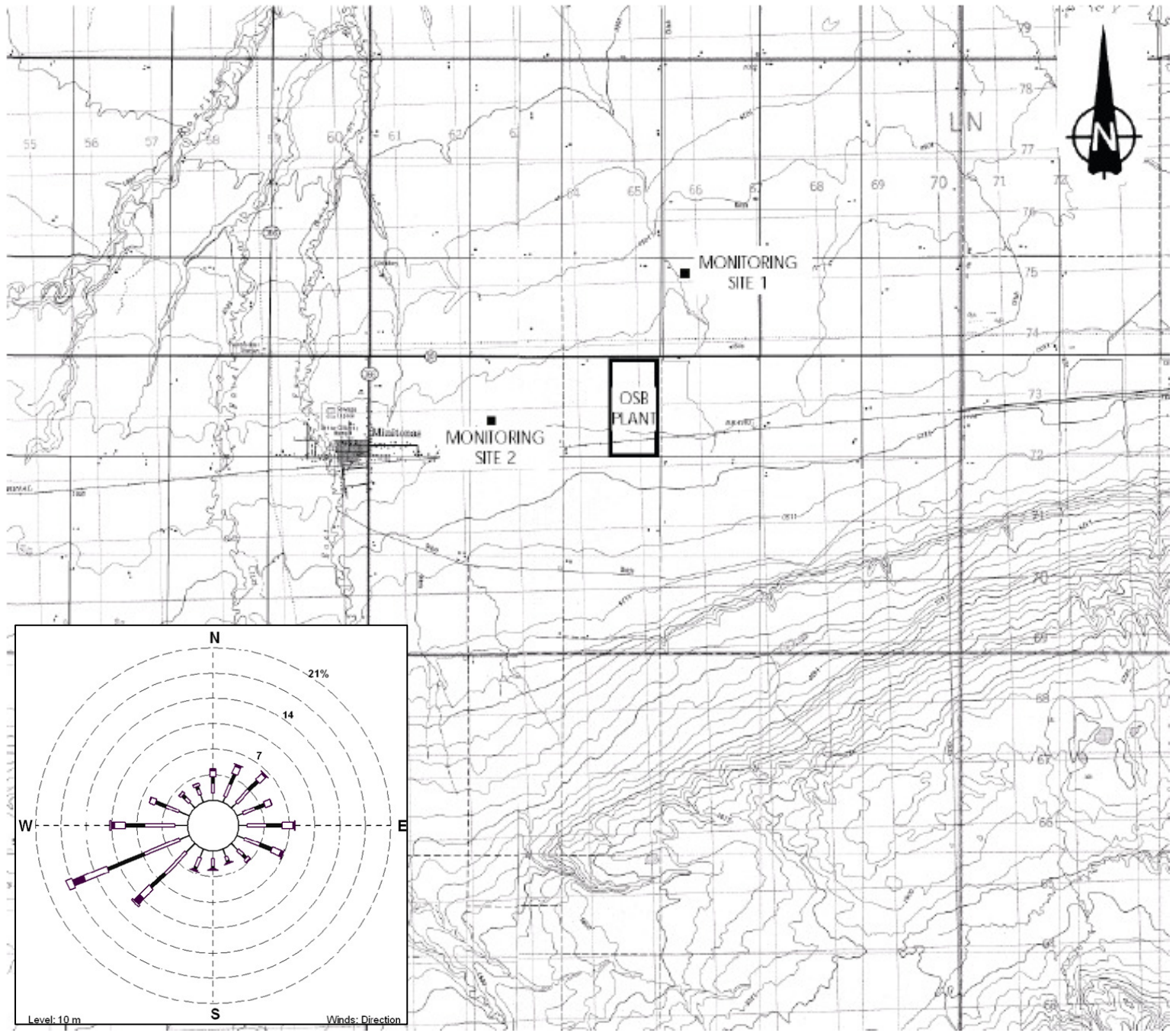
- Health Risk Assessment demonstrates that:
  - cancer risks are virtually non-existent
  - non-cancer risks characterized as no adverse effect
- Health Risk Assessment demonstrates that the proposed emission limits will ensure protection of community health and the environment

# **Proof On the Ground: Monitoring Ambient Air Quality**

## Ambient Air Quality Monitoring

- LP operates a comprehensive ambient air monitoring program to collect meteorological and air quality data in the vicinity of the plant.
- The ambient air quality monitoring network includes two sites
  - Site 1 is located approximately 1.5 km north-northeast of the OSB plant.
  - Site 2 is located approximately 2.0 km west of the OSB plant.



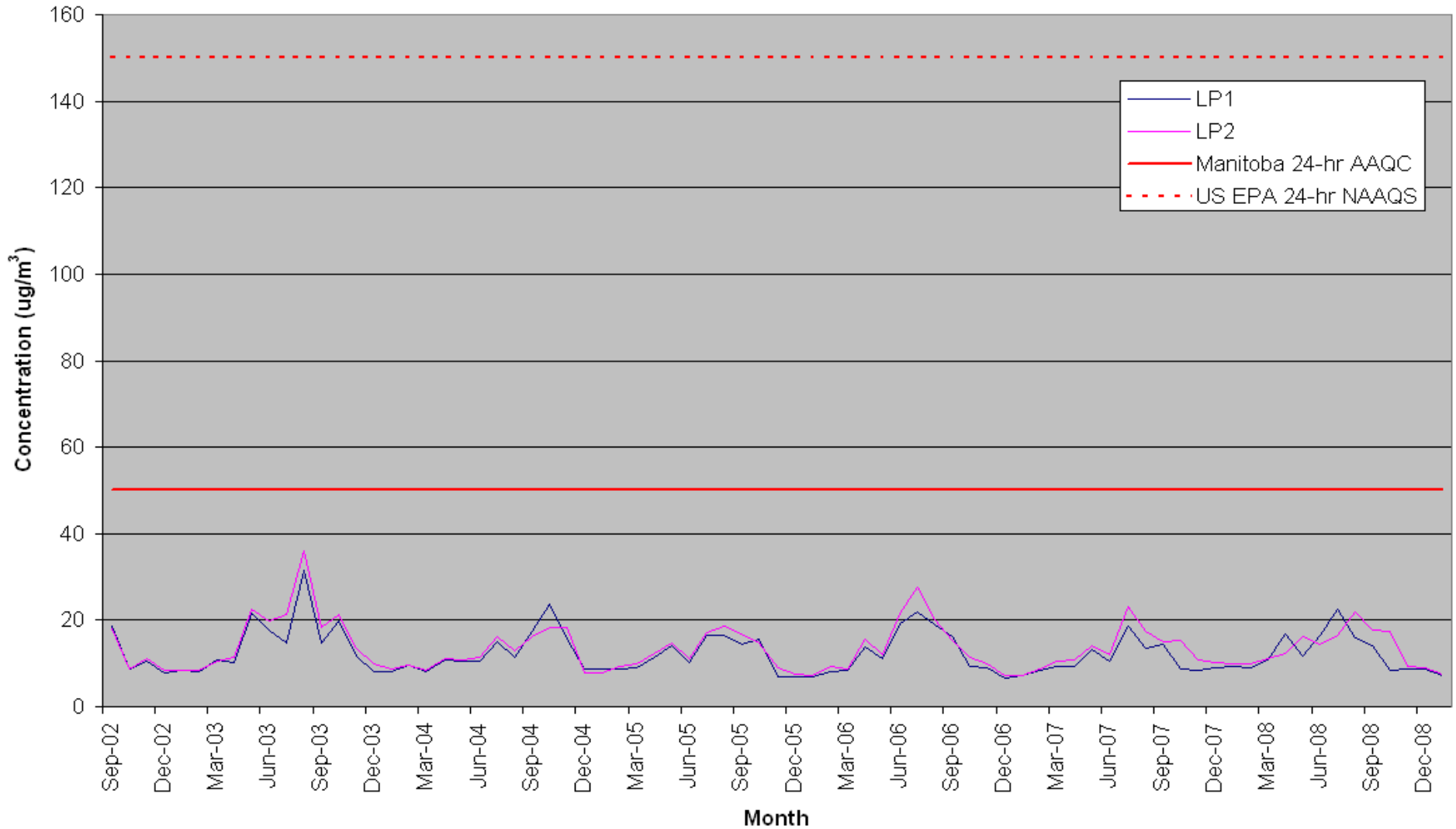


## Measuring Air Quality since 1995

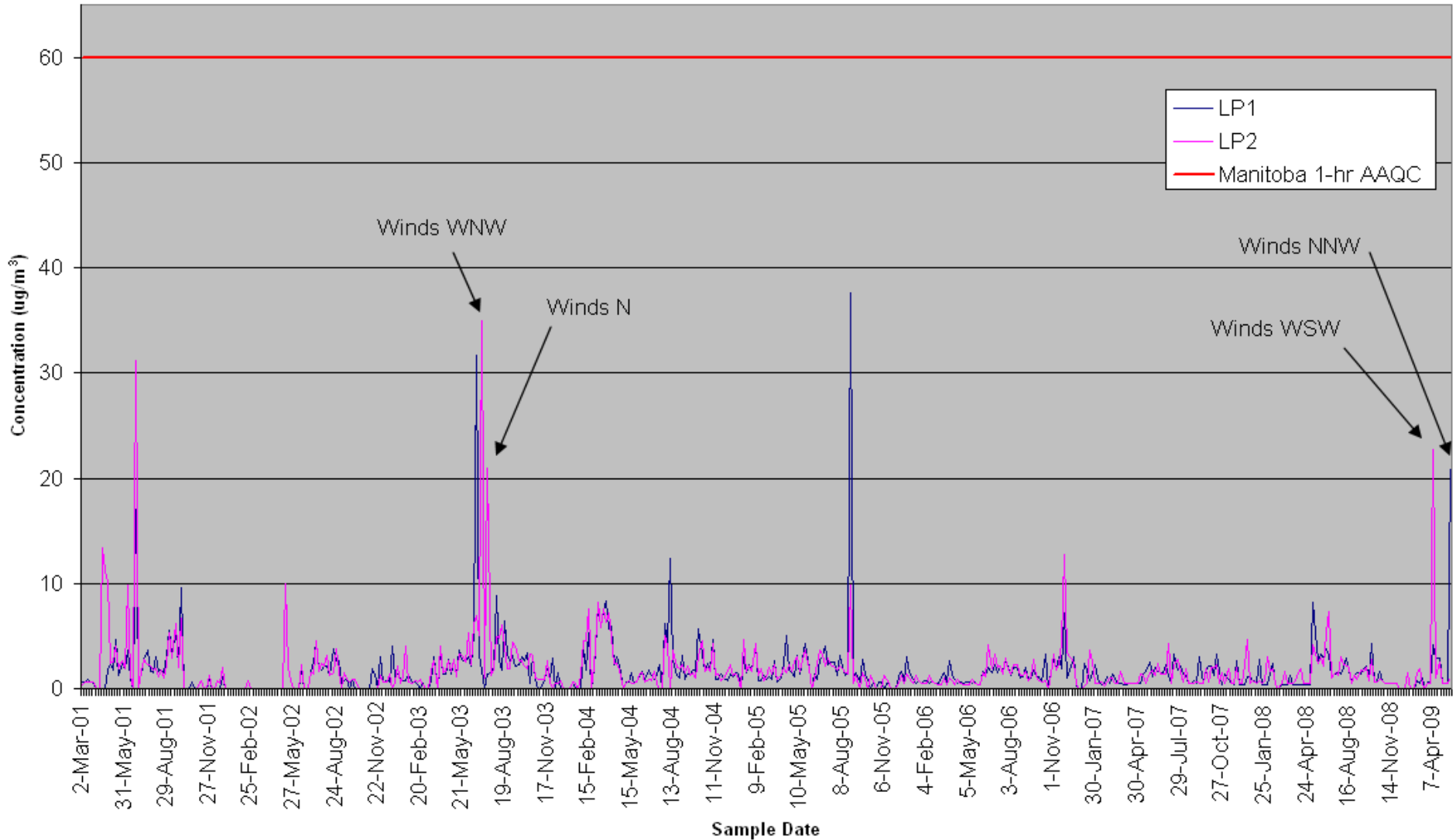
- Particulate Matter (PM10) sampled continuously
- 6-day sample frequency for VOC, Formaldehyde, and Benzene
  - according to National Air Pollution Surveillance (NAPS) schedule
  - network of monitoring stations across the country that all sample on the same schedule
- Phenol, MDI and hydrogen cyanide monitoring quarterly
- Results compiled and submitted to MB Conservation



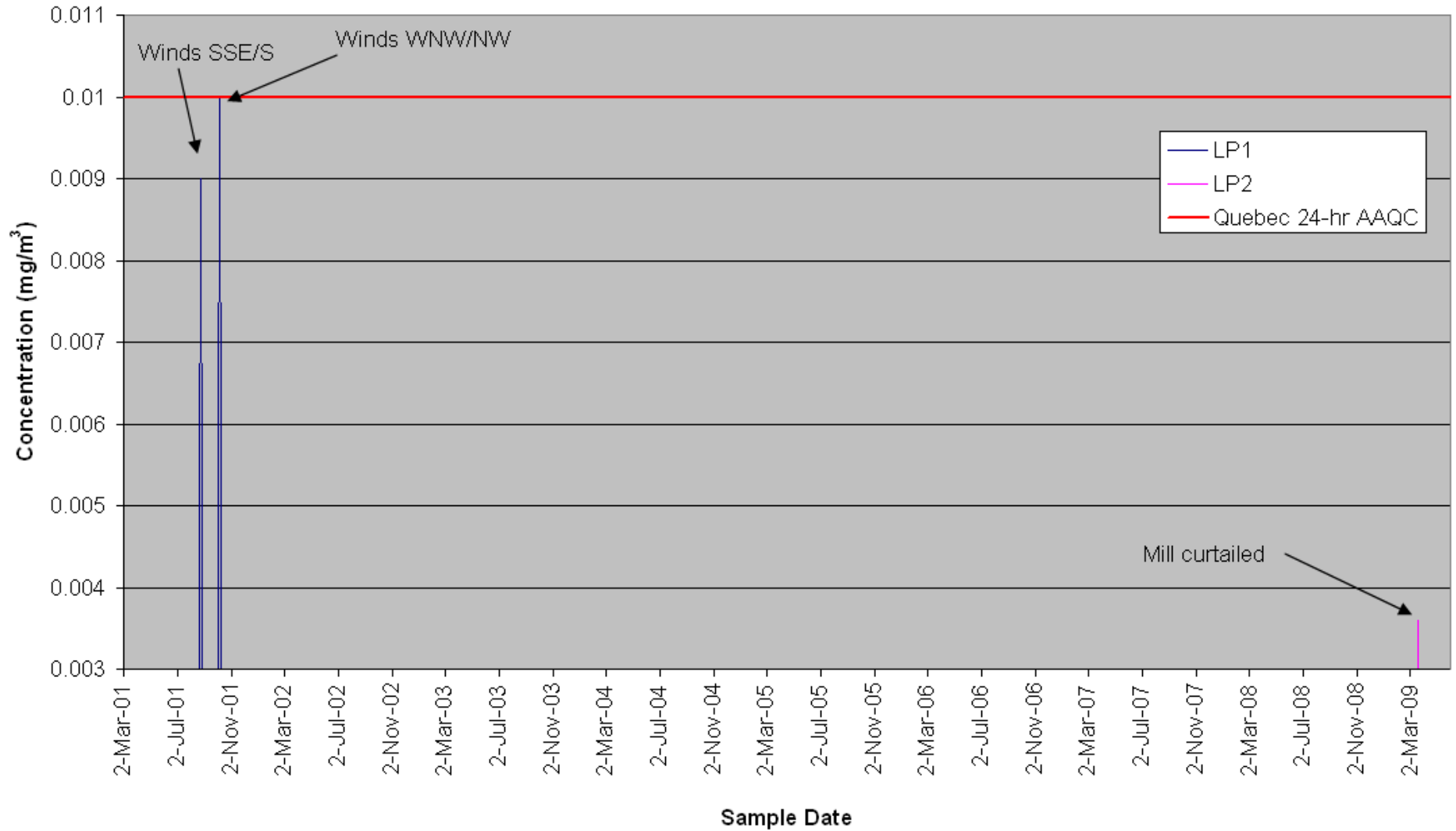
# Measured Average Monthly 24-hr Ambient PM<sub>10</sub> Concentrations



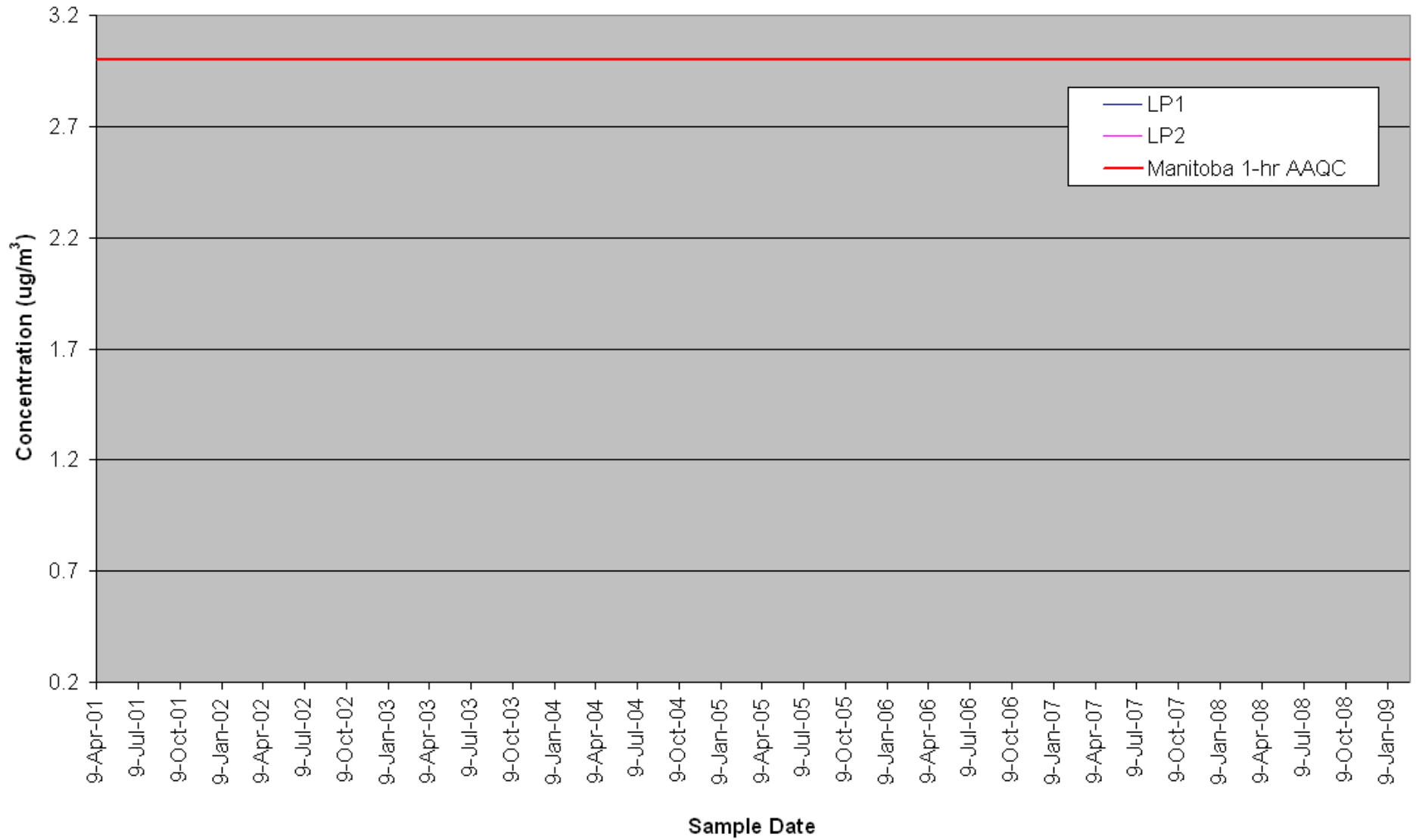
# Measured 1-hr Ambient Formaldehyde Concentrations



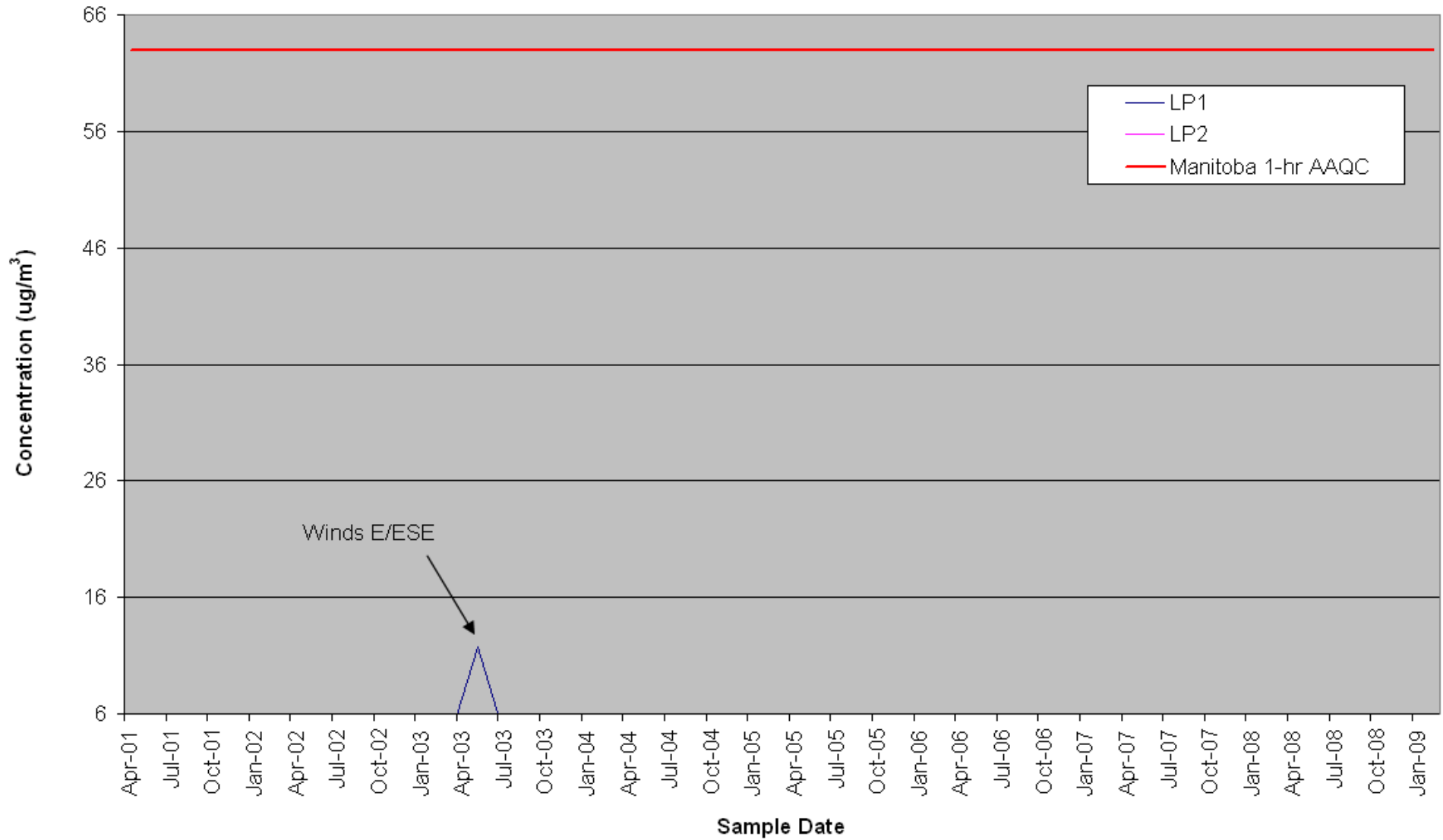
# Measured 24-hr Ambient Benzene Concentrations



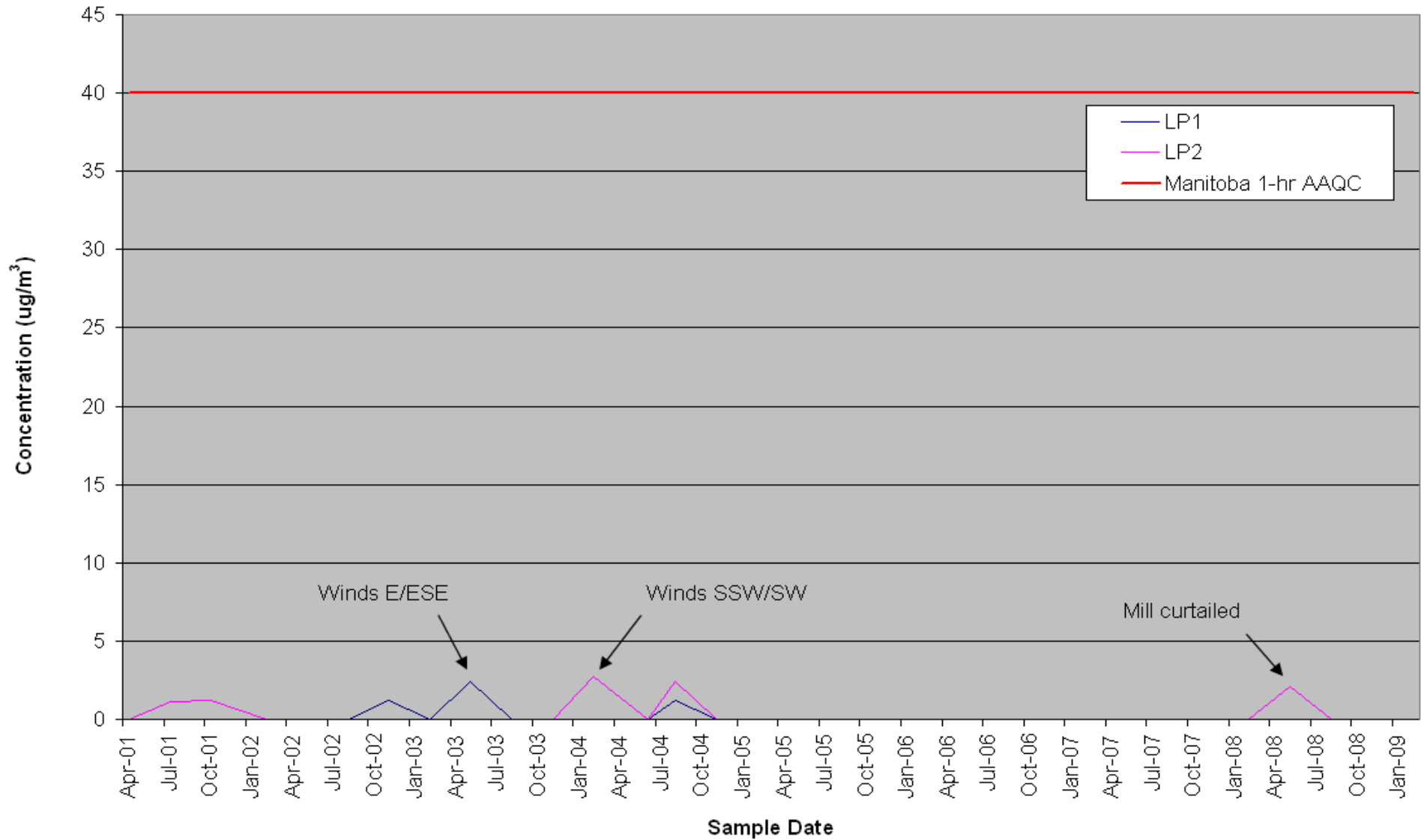
# Measured 24-hr Ambient MDI Concentrations



# Measured 24-hr Ambient Phenol Concentrations



# Measured 24-hr Ambient Hydrogen Cyanide Concentrations





## Section Summary

- Actual measured ambient air quality information demonstrates all ambient air quality criteria are met
- In our application, LP commits to continue the ambient monitoring program, ensuring ongoing protection of community health and the environment

## What We've Demonstrated So Far

- Dispersion modeling demonstrates all AAQC are met 100% of the time,
- Health risk assessment concludes health risks are “virtually non-existent” or “no adverse effect”
- Continued comprehensive ambient air quality monitoring demonstrates all AAQC are met
- Demonstrates that the proposed emission limits (without RTOs) do not pose a risk to community health and environment.

# Environmental Benefits of Shutting Down the RTOs

**Greenhouse Gas  
Emissions Reduced  
by 75%**

## RTOs Create Greenhouses Gases

- The RTOs generate **12,000 tonnes** of GHG per year
  - 0.9% of all combustion sources in the manufacturing sector in Manitoba
    - (Ref. Climate Change Connection)
  - Equivalent of taking 2200 vehicles off the road
- Extremely important to the people of Manitoba in meeting our international GHG reduction commitments

## RTO Elimination Aligns with International Trends

- Consistent with major environmental groups' goals to reduce GHG emissions and the reliance on fossil fuels
  - Sierra Club, World Wildlife Fund, Green Party of Canada, EcoNetwork
- Manitoba Environment Act will require consideration of greenhouse gas emissions for any major development
- US EPA regulations are evolving to consider Life Cycle impacts including greenhouse gas emissions (SENES 2009)

## RTOs Emit Nitrogen Oxides

- Contributor to smog and ground level ozone
  - Near ground level, ozone is formed when chemicals, including Nitrogen Oxides, react chemically in the presence of sunlight.
  - Ground-level ozone can have detrimental effects on plants and ecosystems by making them more susceptible to disease, insects and harsh weather.
- NOx will be reduced by shutting off RTOs

## Assessment of Risk to Flora and Fauna

- Assess the risk of possible harmful affects to plants and animals from exposures to OSB plant emissions
- 1995 (baseline), 1997, 2000, 2005
- Concluded:
  - Emission of ozone precursors from the LPC mill at the OSB plant do not currently appear to promote the formation of ozone in the ambient environment at a level considered harmful to local plants
  - No evidence of ozone-related damage on samples of two common local plant species known to be sensitive to ozone (i.e. trembling aspen and alfalfa)
- Committed to Flora and Fauna study in 2010



## Section Summary

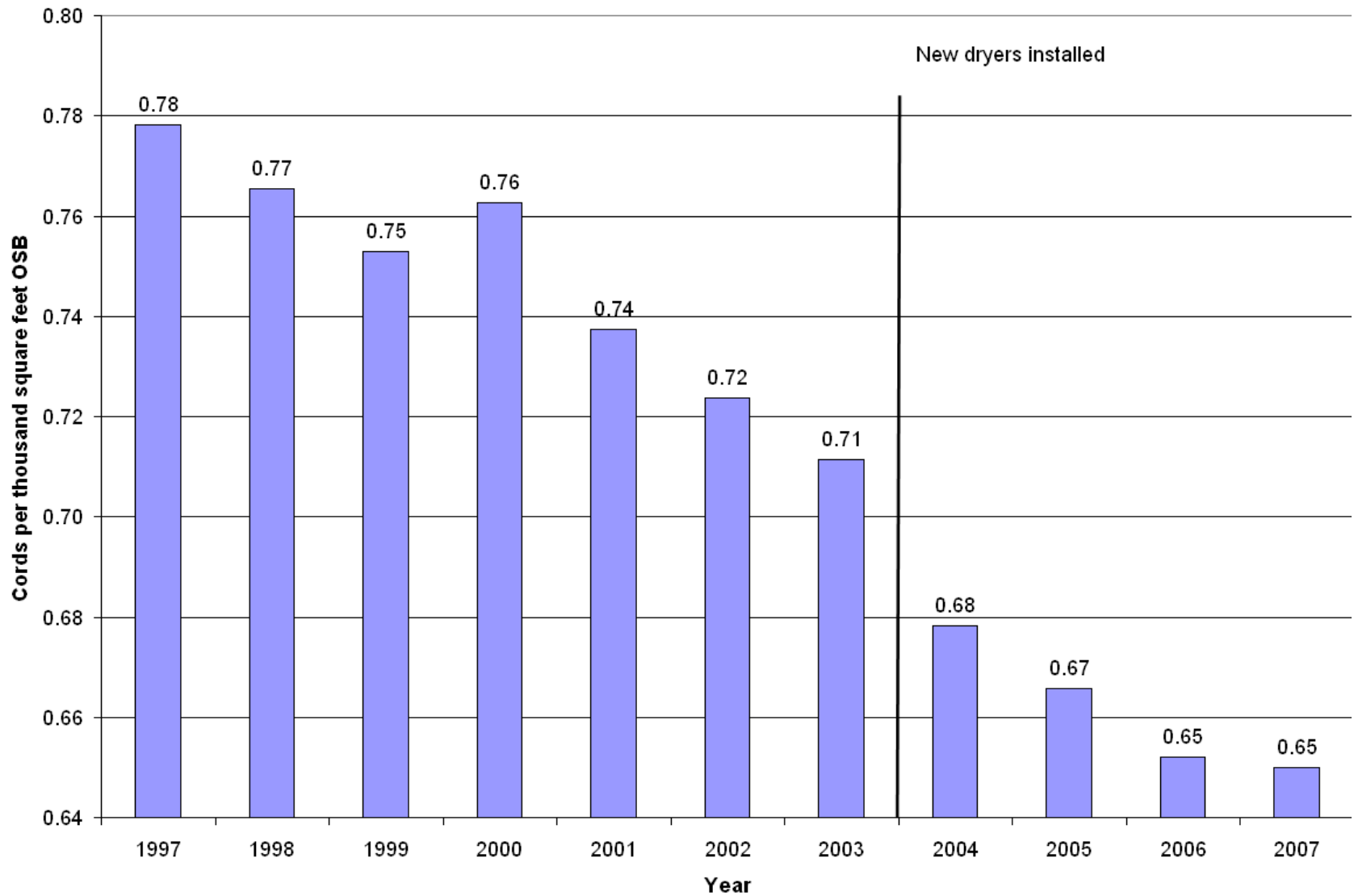
- 75% reduction in GHG emissions
- Reduction in nitrogen oxide emissions
- Consistent with Manitoban and Canadian commitments

# Ensuring LP Swan Valley is Sustainable

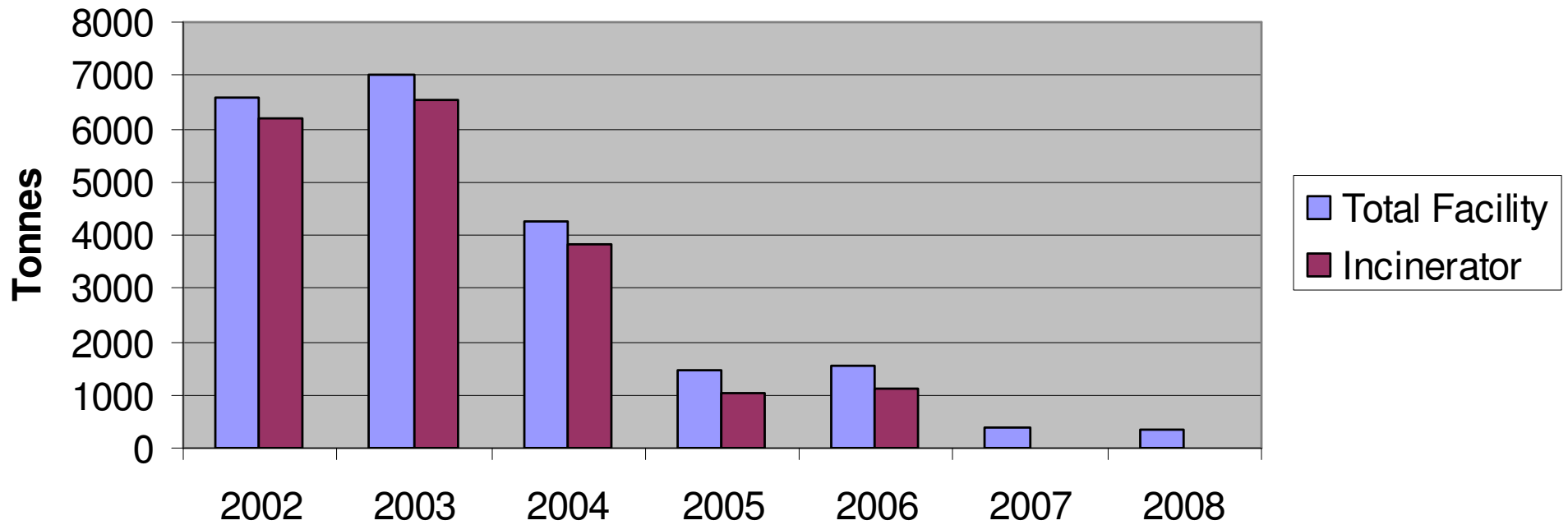
## Continuously Improving the Process

- Continuously improving resource usage (yield)
  - Invested \$26 million dollars in 2004 on the latest energy system and drying technology
  - 10% improvement in yield
  - Lower temperature, single pass drying generates fewer emissions
  - Project received Honorable Mention in the 2005 in CCME Pollution Prevention Awards

# Optimizing Resource Usage



## Reduction in Total Facility Emissions



## Reducing Emissions at the Source

- Resins
  - We use the lowest formaldehyde resins available (PF and MDI), minimizing resin-related formaldehyde emissions from the press
  - Use of MDI also allows higher moistures and lower drying temperature to further minimize wood-related emissions from the dryers

## Section Summary

- LP Swan Valley continues to optimize the process to reduce emissions at the source

# Socio-Economic Review



## LP Swan Valley's Economic Contribution

- 550 direct jobs
- Over \$35 million contributed annually to the local economy
  - \$12 million LP employee payroll
  - \$21 million in logging contracts in 2007
  - \$11.5 million maintenance costs
- \$26 million dollars invested on latest drying and energy technology in 2004

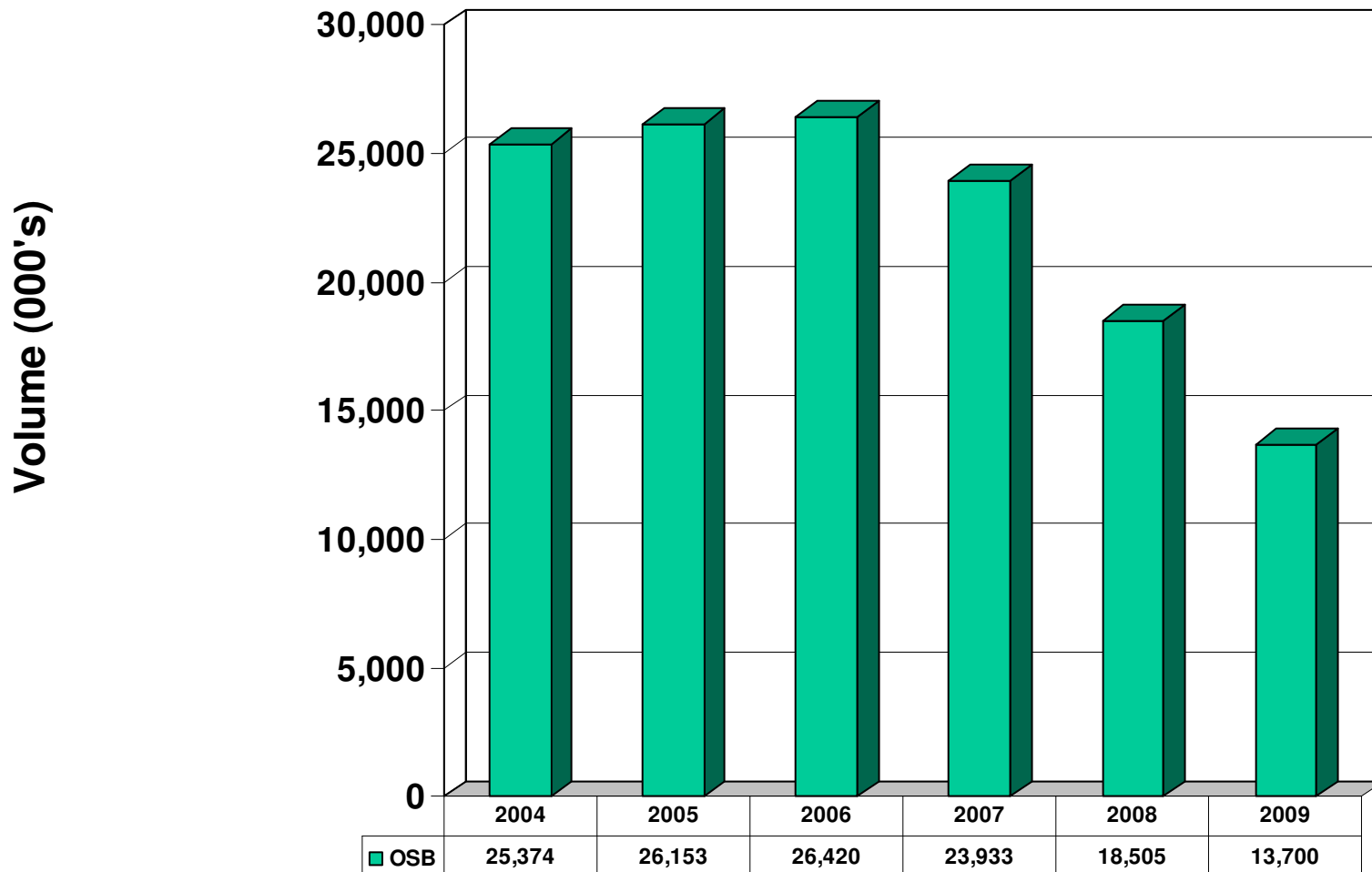
## The Impact of Operating RTOs

- Significant competitive disadvantage to LP Swan Valley
  - \$3.2 million annual operating and maintenance expenses
  - \$10 million capital replacement within the next few years
  - Only forest products mill in Canada with RTOs
  
- We will be monetarily penalized for running RTOs as carbon tax systems (such as in BC), carbon markets and/or GHG regulations are developed.

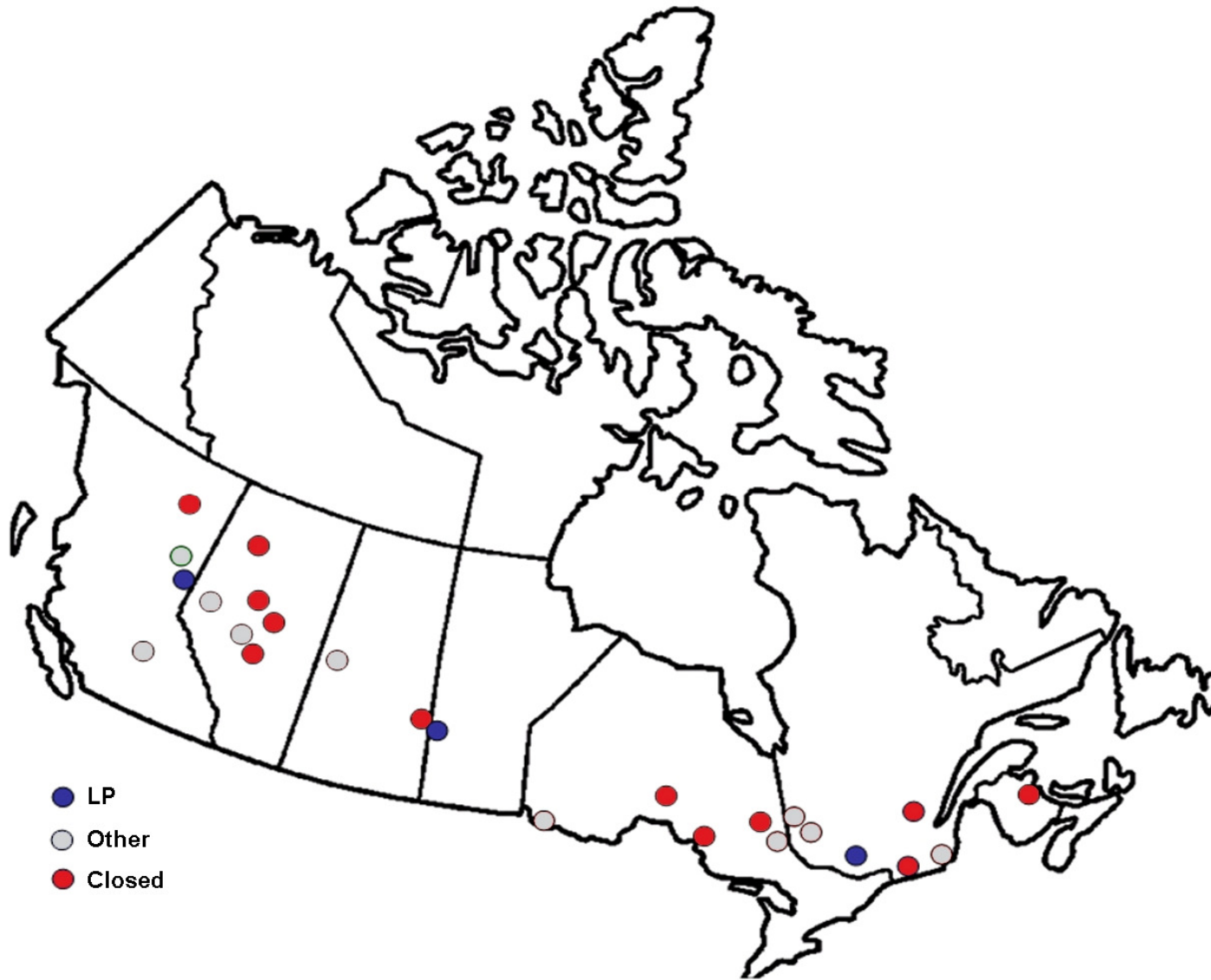
## State of the Industry

- Canadian Forest Service data show that as of March 31, 2009 there were:
  - 386 forest product mills indefinitely closed, permanently closed, or curtailed
  - 44,050 layoffs
- Since 2006:
  - North American OSB demand has dropped by 50%
  - 12 of 25 Canadian OSB facilities are permanently or indefinitely closed (two of these are LP facilities)
  - many others are on reduced capacity

## North American OSB Demand



## 12 OSB Plants in Canada Have Closed Since 2006



## The Market Situation is Significantly Impacting our Workforce and the Local Economy

- 17 employees were laid off in 2008
- During curtailment months an additional 50 employees (approx) are laid off
- Turnover rate has increased from 4% to 20%
- Maintaining trades-people has been a challenge
- Many production operators have left to seek other opportunities
- 15 logging contractors (25%) have ceased operations
- We are 1 of only 3 operating LP OSB mills left in Canada (down from 5)

## The Mill has been Adjusting to the Downturn in an Effort to Minimize Losses

- Production in 2008 reduced by 40% of normal volume
- Production in 2009 YTD reduced by 70% of normal volume
- Reduced logging rates by 5%.
- Reduced wood volume at break-up to 62,000 cords (about ½ of normal volumes)
- Aggressive cost savings initiatives (including Lean Manufacturing) have reduced operating costs in 2008 by over \$7,000,000.

# Approval of our Application is Warranted



## The Proposed Amendments...

- **Maintain protection of community health and the environment**
- **Provide numerous environmental benefits**
  - **Reduce greenhouse and nitrogen oxide emissions**
- **Equalize the “playing field” with the Canadian OSB industry**
- **Contribute to the Sustainability of LP in the Valley**

**LP requests a recommendation  
from the CEC to approve our  
application**